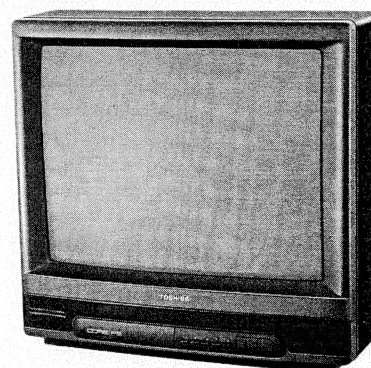


SERVICE DATA
FILE NO. 050-127
21-SYSTEM

TOSHIBA

COLOUR TELEVISION

198X8M



SPECIFICATIONS

Power Input Rating :	71 watts (nominal), AC90 ~ 270 volts, 50/60Hz
Aerial Input Impedance :	75 ohm unbalanced type VHF and UHF
Receiving Channels :	PAL B/G, SECAM B/G system VHF channels channels 2 to 12 UHF channels channels 21 to 69 PAL D/K, SECAM D/K, K1 system VHF channels channels 1 to 12 UHF channels channels 21 to 69 PAL I system UHF channels channels 21 to 69 NTSC standard (US M, JAPAN M) system VHF channels channels 2 to 13/1 to 12 UHF channels channels 14 to 78/13 to 62 CATV BAND PAL B/G, SECAM B/G { X ~ Z (S1 ~ S3) M1 ~ M10 (S1 ~ S10) U1 ~ U10 (S11 ~ S20) NTSC-M { A-6 ~ A-1 A ~ I J ~ W
Intermediate Frequencies :	Picture I-F carrier frequency 38.0 MHz Sound I-F carrier frequency 33.5/32.5/32.0/31.5MHz
Picture Tube :	A46JAR96X01(PMW) (46 cm measured on diagonal of viewable picture area), 90° Deflection
Sound Output :	5.0 watts (at 10% harmonic distortion)
Speaker :	Oval : 5 cm x 6 cm, 2 pcs
Cabinet :	Plastic Portable Type
Dimension :	Height 450 mm Width 465 mm Depth 452 mm
Weight (Net) :	19 kg
Features :	Flat and Square tube, VIDEO and AUDIO input terminals, Remote Control.

Specifications are subject to change without notice.

SAFETY INSTRUCTIONS

WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION" , "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" DESCRIBED BELOW.

X-RAY RADIATION PRECAUTION

1. Excessive high voltage can produce potentially hazardous X-RAY RADIATION. To avoid such hazards, the high voltage must not be above the specified limit. The nominal value of the high voltage of this receiver is 27kV at zero beam current (minimum brightness) under 110 ~ 245V AC power source. The high voltage must not, under any circumstances, exceed 29kV.
Each time a receiver requires servicing, the high voltage should be checked following the HIGH VOLTAGE CHECK procedure in this manual. It is recommended the reading of the high voltage be recorded as a part of the service record. It is important to use an accurate and reliable high voltage meter.
2. The only source of X-RAY RADIATION in this TV receiver is the picture tube. For continued X-RAY RADIATION protection, the replacement tube must be exactly the same type tube as specified in the parts list.
3. Some parts in this receiver have special safety-related characteristics for X-RAY RADIATION protection. For continued safety, parts replacement should be undertaken only after referring to the PRODUCT SAFETY NOTICE below.

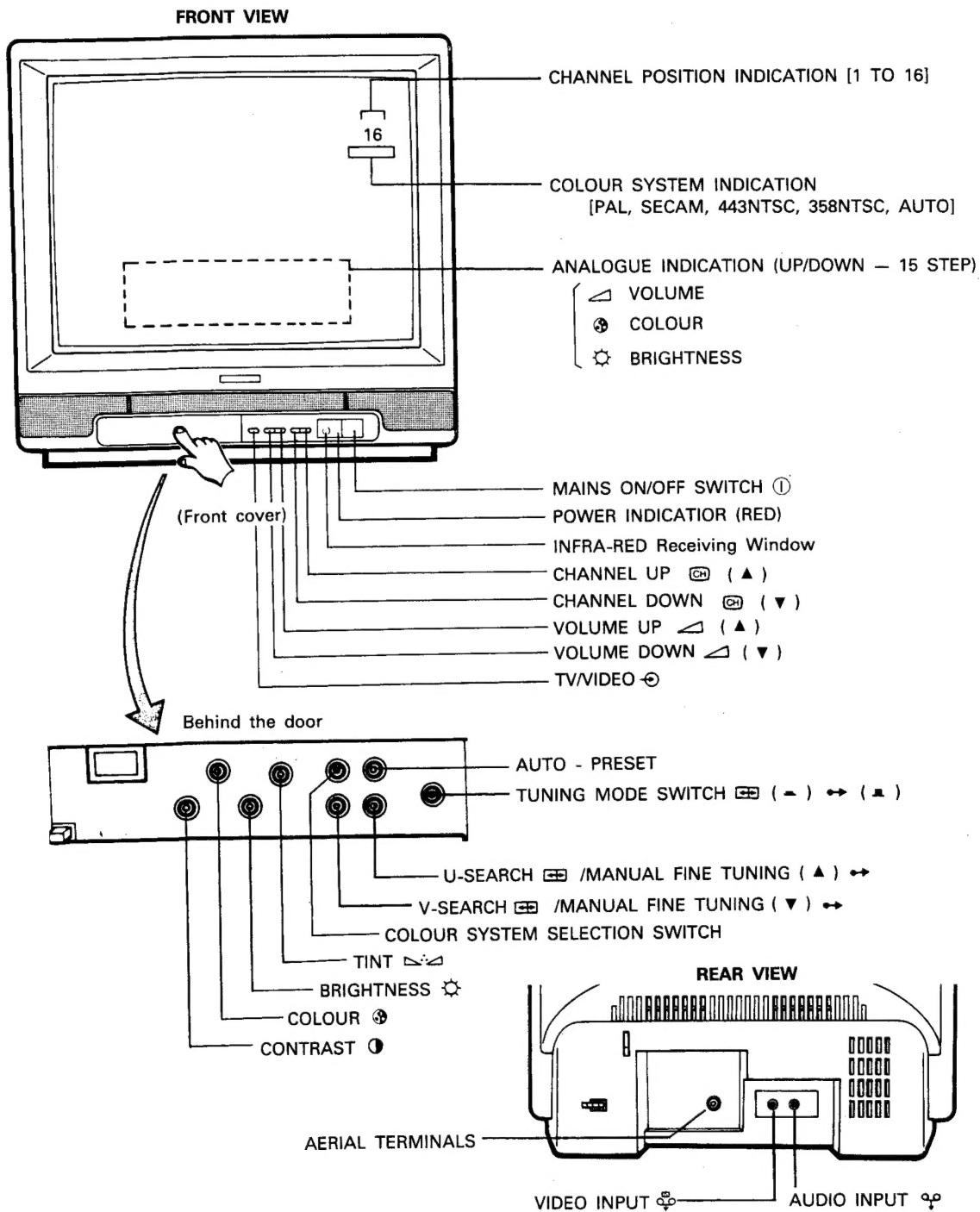
SAFETY PRECAUTION

1. Potentials as high as 27 kV are present when this receiver is operating. Operation of the receiver outside the cabinet or with back board removed involves a shock hazard from the receiver.
 1. Servicing should not be attempted by anyone who is not thoroughly familiar with the precautions necessary when working on high-voltage equipment.
 2. Always discharge the picture tube anode to the receiver chassis to keep off the shock hazard before removing the anode cap.
 3. Perfectly discharge the high potential of the picture tube before handling the tube. The picture tube is highly evacuated and if broken, glass fragments will be violently expelled.
2. If any Fuse in this TV receiver is blown, replace it with the FUSE specified in the specified in the chassis parts list.
3. When replacing parts or circuit boards, wind the lead wires around terminals before soldering.
4. When replacing a high wattage resistor (oxide metal film resistor) in circuit board, keep the resistor 10mm away from circuit board.
5. Keep wires away from high voltage or high temperature components.
6. This receiver can be operated under AC 90 ~ 270 volts, 50/60Hz. NEVER connect to DC supply or any other power.

PRODUCT SAFETY NOTICE

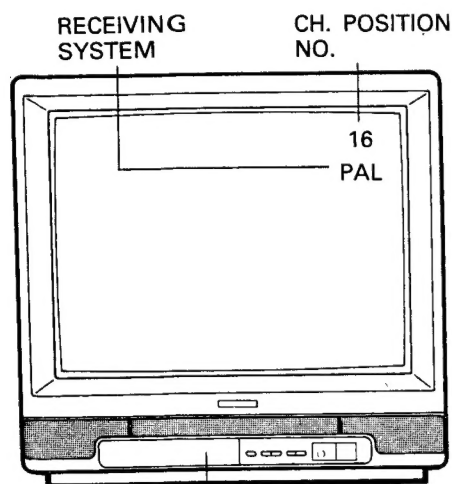
Many electrical and mechanical parts in this chassis have special safety-related characteristics. These characteristics are often passed unnoticed by a visual inspection and the X-RAY RADIATION protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this manual and its supplements, electrical components having such features are identified by the international hazard symbols on the schematic diagram and the parts list.
Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts which do not have the same safety characteristics as specified in the parts list may create X-RAY RADIATION.

FRONT CONTROL AND REAR VIEW



COLOUR SYSTEM SELECTION SWITCH OPERATION

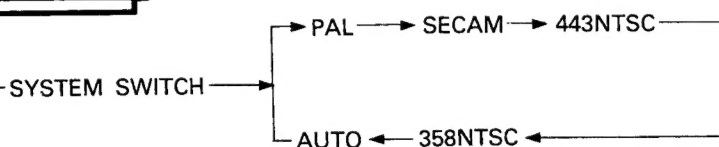
This TV receiver can receive 21 systems.



- AUTO All signals of 21 systems can be received.
 - PAL PAL Signal can be received.
 - SECAM SECAN Signal can be received.
 - 443NTSC Signal from VTR on 4.43NTSC can be received.
 - 358TNSC 3.58NTSC signal can be received.
- U.S.CHANNEL, JAPAN CHANNEL
(PHILIPPINES, KOREA)

Note: Colour system indication is displayed in green when the TV is switched on.

When using the unit in poor electric field or unstable signal area, turn the system switch from "AUTO" to "MANUAL" (PAL, SECAM, 443NTSC, 358NTSC) for perfect reception.



Receiving Systems		
21 System		Function
1. PAL B/G		Reception of broadcast and playback for video cassette recorder
2. PAL I		
3. PAL D/K		
4. SECAM B/G		
5. SECAM D/K, K1		
6. NTSC M		
7. NTSC 4.43/5.5MHz		Playback for special video cassette recorder
8. NTSC 4.43/6.0MHz		
9. NTSC 4.43/6.5MHz		
10. NTSC 3.58/5.5MHz		
11. NTSC 3.58/6.0MHz		
12. NTSC 3.58/6.5MHz		
13. SECAM I (6.0MHz)		
14. SECAM L-Video In		
15. NTSC 3.58/ 4.5MHz/50Hz		Playback for special video disk, CDV player
16. PAL 5.5MHz/60Hz		
17. PAL 6.0MHz/60Hz		
18. PAL 6.5MHz/60Hz		
19. SECAM 5.5MHz/60Hz		
20. SECAM 6.0MHz/60Hz		
21. SECAM 6.5MHz/60Hz		

Receiving channels

Regular TV VHF BAND

2 - 12 (PAL/SECAM - B)
 1 - 12 (PAL/SECAM - D)
 2 - 9 (SECAM - K1)
 2 - 13 (NTSC - M) US
 1 - 12 (NTSC - M) JAPAN

Regular TV UHF BAND

21 - 69 (PAL/SECAM - G, PAL I)
 21 - 69 (SECAM - K)
 13 - 56 (PAL - K)
 14 - 78 (NTSC - M) US
 13 - 62 (NTSC - M) JAPAN


CATV BAND

X ~ Z (S1-S3)
 M1 ~ M10(S1-S10) (PAL/SECAM - B, G)
 U1 ~ U10 (S11-S20)
 A-6 ~ A-1
 A ~ 1 (NTSC - M)
 J ~ W

OPERATING THE TELEVISION RECEIVER

TO SWITCH ON THE RECEIVER

Push in the POWER switch. POWER indicator will be illuminated.

Note: If the receiver stays in standby mode, push the  ▲ ▼ buttons.

TO ADJUST VOLUME (▲ ▼)

Keep on pressing the VOLUME UP button for increase in volume.

Keep on pressing the VOLUME DOWN button for decrease in volume.

Release the button at your desired volume level.

CHANNEL SELECTION AND TUNING (▲ ▼)

You can select your favourite program by the channel selection keys on the remote control hand unit or "CHANNEL UP/DOWN" keys on the front of the receiver.


To enjoy the program which is not preset, set the channel by following procedure.

(1) CHANNEL PRESET PROCEDURE


Select the position to be preset by the Channel Position Button (▲ or ▼) on the TV set or the remote control hand unit or by the Direct Position Selector on the remote control hand unit.

To select a position from 11 to 16, press the "1-" button first, and then press one of the buttons from "1" to "6".
For example: 16th position; Press the "1-" and "6" buttons.

(2) SEARCH

- a. Push on the tuning mode switch. ( (→))
- b. Push the VHF SEARCH key.
 - When television signal is caught, search operation stops and the channel is memorized automatically.
 - During search operation, " >>> " is indicated under the position indication.
 - When SEARCH gets to the END of VHF, the display " >>> " will flash.
- c. Push the UHF SEARCH key.
 - When television signal is caught, search operation stops and the channel is memorized automatically.
 - During search operation, " >>> " is indicated under the position indication.
 - When SEARCH gets to the END of UHF, the display " >>> " will flash.

(3) MFT (Manual Fine Tuning)

- a. Push off the tuning mode switch. ( (←))
- b. Tune the fine picture by MFT button. (▲ or ▼)

AUTO PRESET

- By pressing the AUTO PRESET button, channel position number and indication " >>> " are displayed at the top righthand side of the screen, and then "SEARCH" operation starts.
- Once started, "SEARCH" selects signals presenting on broadcast in sequence from lower channel to higher channel and the receiver set memorises automatically these selected channels storing them one by one into the position one and the subsequent positions.
- With completion of the operation, " >>> " disappears. Now "SEARCH" returns to the position one and the channel selected by the position one can be received.

BRIGHTNESS CONTROL

Adjust the BRIGHTNESS Control for natural brightness if the picture appears too dark or too light. For the best results, adjust the BRIGHTNESS and CONTRAST Controls together, until the picture is clear and sharp.

CONTRAST CONTROL

If the picture does not show desired contrast between light and dark shades, adjust the CONTRAST Control for desired picture quality. A slight readjustment of the BRIGHTNESS Control may also be necessary.

TO ADJUST COLOUR

After obtaining the best black and white picture, carefully turn the COLOUR Control slowly clockwise.

TO ADJUST TINT (For NTSC 3.58 and NTSC 4.43 systems)

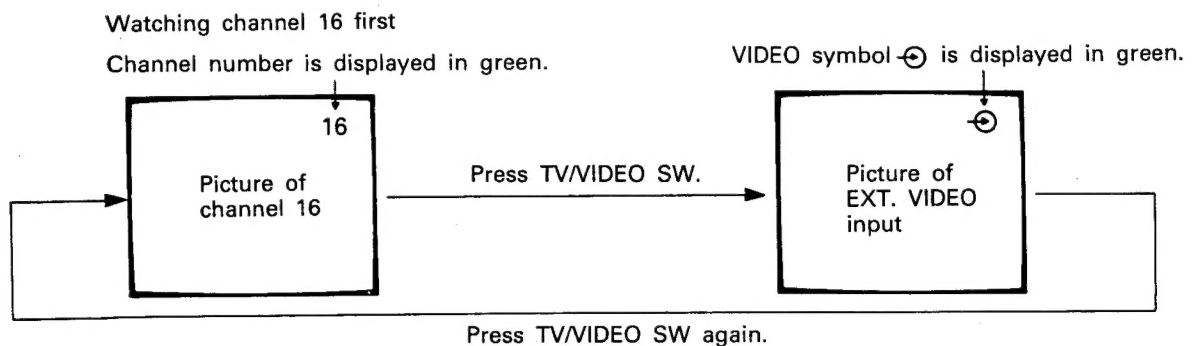
Adjust the TINT Control to obtain natural facial tones.

When facial tones are natural, all other colours in your picture will be seen in true-to-life brilliance.

TV/VIDEO SWITCH

When you enjoy the program from the video equipment, such as VCR, press this button on and "VIDEO" indication comes out as illustrated below.

The TV picture changes as shown in the following figures.

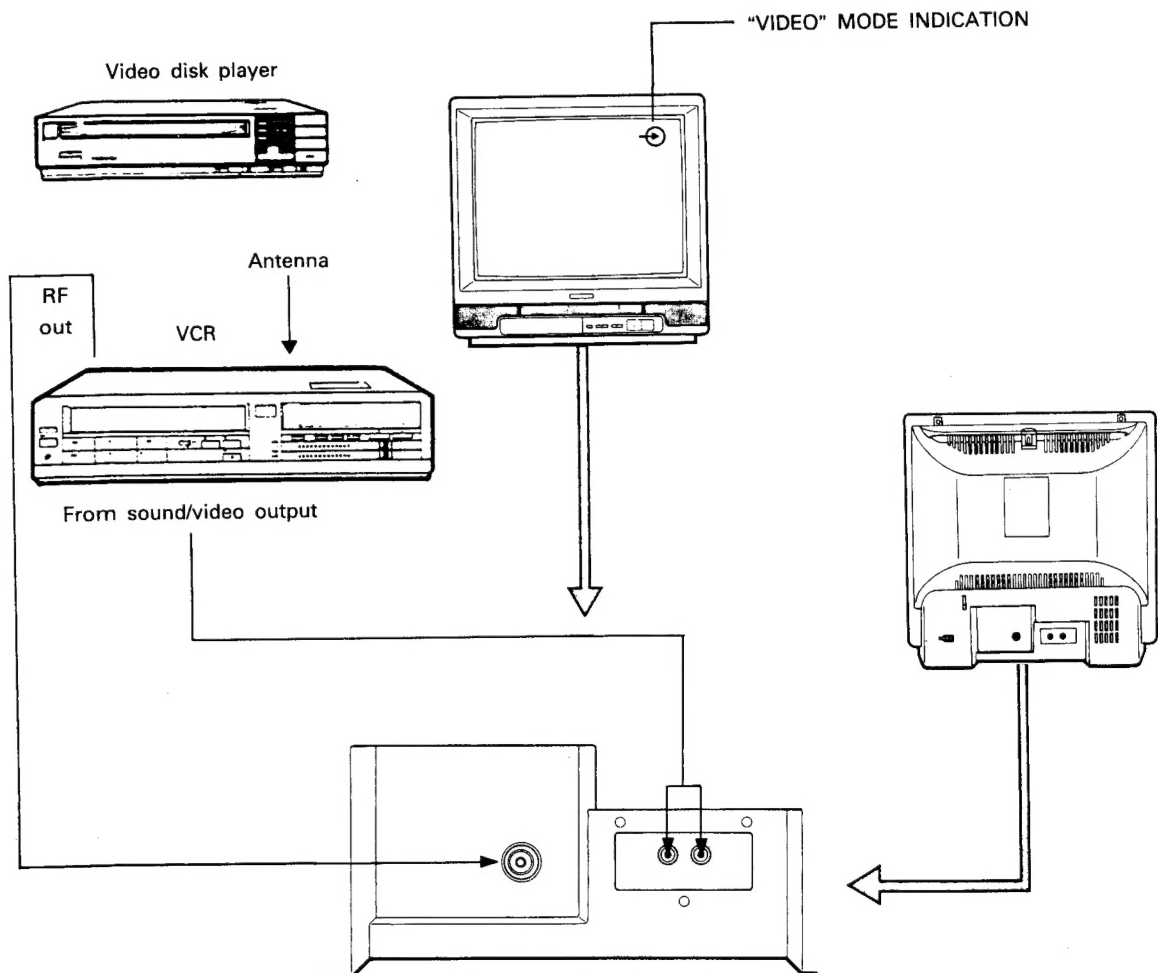


NOTE: The "VIDEO" mode indication may happen to appear on the screen during playback of a VCR or a video disk player (especially at still or fast forward mode) while the indication is set to the "OFF-SCREEN" mode. This is not the trouble of the receiver.

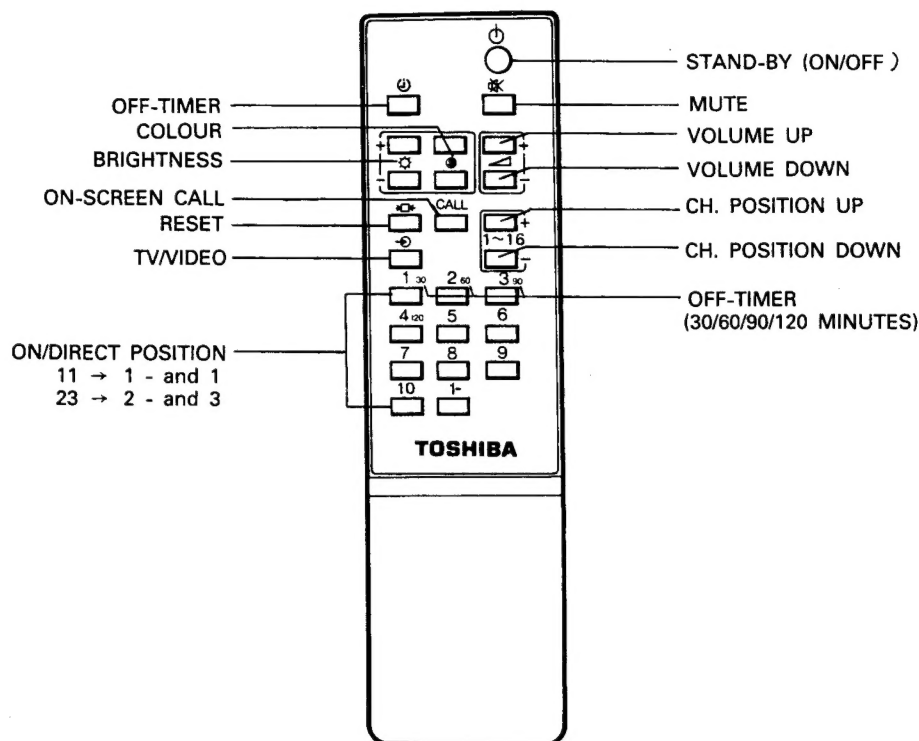
INPUT AND OUTPUT TERMINALS

VIDEO AND AUDIO INPUT TERMINALS

- This TV is provided with a video and audio input terminals, which can be connected with output from video equipment (VCR and video disk player).



REMOTE CONTROL HAND UNIT



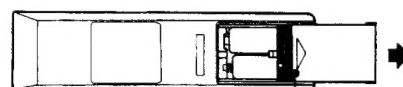
Before operating

INSTALLING THE BATTERIES

1. Remove the battery cover.
2. Insert the two "AA" (pencil size) 1.5V batteries making sure the polarity (+ or -) of the batteries matches the polarity marks inside the unit.
3. Close the battery cover.

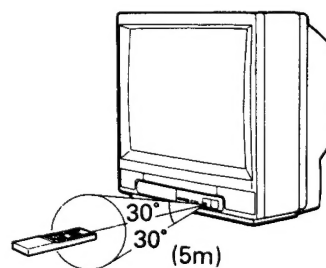
TIPS FOR REMOTE OPERATION

- If intermittent remote control operation occurs, replace the batteries according to "INSTALLING THE BATTERIES."
- The battery life should be about a year under normal use.
- When the Remote Control Hand Unit is not used for a long period of time or when the batteries are worn out, take out the batteries to prevent liquid leak.
- Do not throw the batteries into a fire. Dispose of used batteries in the specified places.
- Take care not to drop, dampen, disassemble the Remote Control Hand Unit.



Press and slide to open.

Effective Range



REMOTE OPERATION

Before using the Remote Control Hand Unit, push the power switch on the receiver to turn the TV set on.


1. STAND-BY "ON/OFF" Button ()

To switch on, push the button. To switch off, push the button again.

2. ON/DIRECT POSITION Selector

To switch the TV set "ON", press any of the position buttons, and the program in that position comes out.

3. VOLUME UP or DOWN Button ()


 Continuous press increases Volume gradually.


 Continuous press decreases Volume gradually.

Release the button at your desired volume.


4. BRIGHTNESS Button ()


Press the BRIGHTNESS  button.


 Continuous press increases Brightness gradually.

 Continuous press decreases Brightness gradually.



5. COLOUR Button ()



Press the COLOUR  button.

 Continuous press increases Colour gradually.


 Continuous press decreases Colour gradually.

VOLUME, BRIGHTNESS and COLOUR Adjustment

1. The level control keys ( or ) are common to the functions. These keys work only while the selected function is displayed. (for 4 sec.)

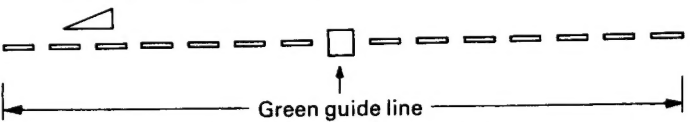





2. Above display will disappear if no additional pressing of CONTROL or LEVEL ( / ) key is done within 4 seconds.

3. The last adjusted value will be stored into memory IC when LEVEL ( or ) key is released.

4. The RESET () key resets the value corresponding to picture control functions, such as VOLUME, BRIGHTNESS and COLOUR, to the value which is returned to the original levels.

5. Adjustment steps and indication :

Each function can be adjusted with 64 steps and it's adjusted approx. value is displayed with 15 steps.

FUNCTION	ON-SCREEN ADJUSTMENT DISPLAY	
		
	CONTROL DOWN  Button (The green square moves left)	CONTROL UP  Button (The green square moves right)
VOLUME 	Decrease in volume	Increase in volume
BRIGHT 	Dark	Light
COLOUR 	Pale	Deep

6. CALL Button

The selected CH. No. and Receiving Colour System are indicated on the TV screen when the "CALL" button is pressed.

The indication disappears by the second press.

7. RESET Button ()

By pushing the RESET button, the levels of the colour, the brightness and contrast return to the original levels.

8. TV/VIDEO Button ()

The function of this button is exactly the same as "TV/VIDEO" switch described on page 7.

9. MUTE Button ()

Pushing the button stops the sound temporarily.

Pushing the button again returns the sound to the volume at which it was set immediately before the muting.

Use when the telephone rings.

10. OFF-TIMER ()

OFF-TIMER function is incorporated in new control system. Four kinds of setting time, such as 30, 60, 90 and 120 min., are available and its remaining time before turning off a set can be displayed on the screen.


OFF-TIMER is only operated with Remote Control Hand Unit.

For example, if you wish to switch the TV set off after 30 minutes:

1. Press TIMER  Button.

The TIMER mode is displayed on the screen.

2. Press "  " Button.

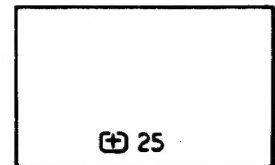
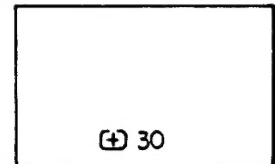
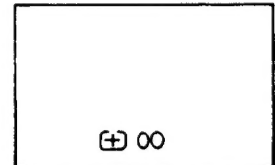
"  30" will appear on the screen and OFF-TIMER INDICATOR lights up.

3. Press TIMER Button again.

The display of TIMER mode will disappear.

4. When you want to know the remaining time before turning off a set, press TIMER button. Then the remaining time will show up on the screen.

Note : To cancel the timer operation, ① press TIMER button ② press RESET button.
Timer operation is also cancelled by turning the power off.



CHASSIS TOP VIEW

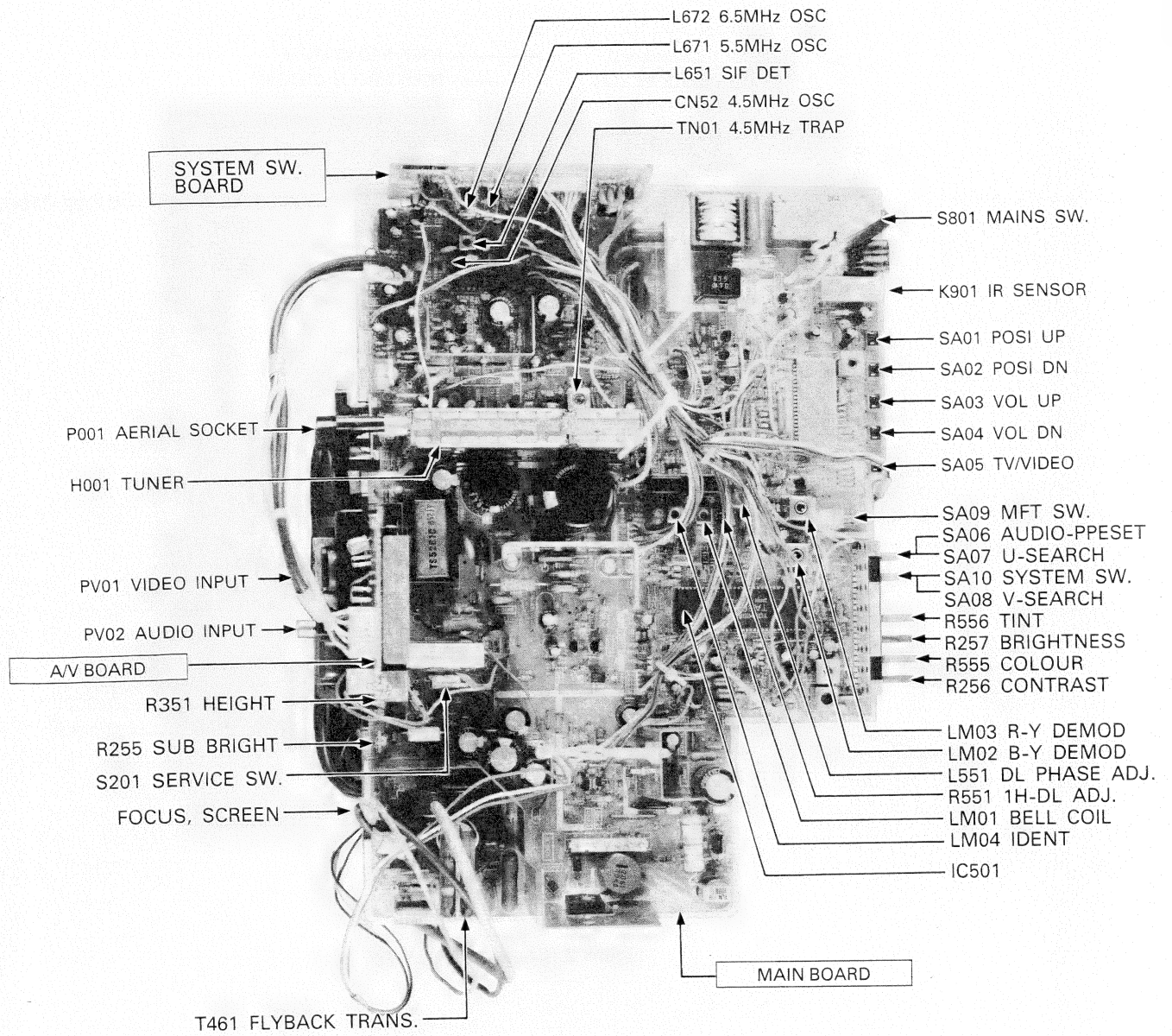


Figure 1. Chassis Top View

CHASSIS REAR VIEW

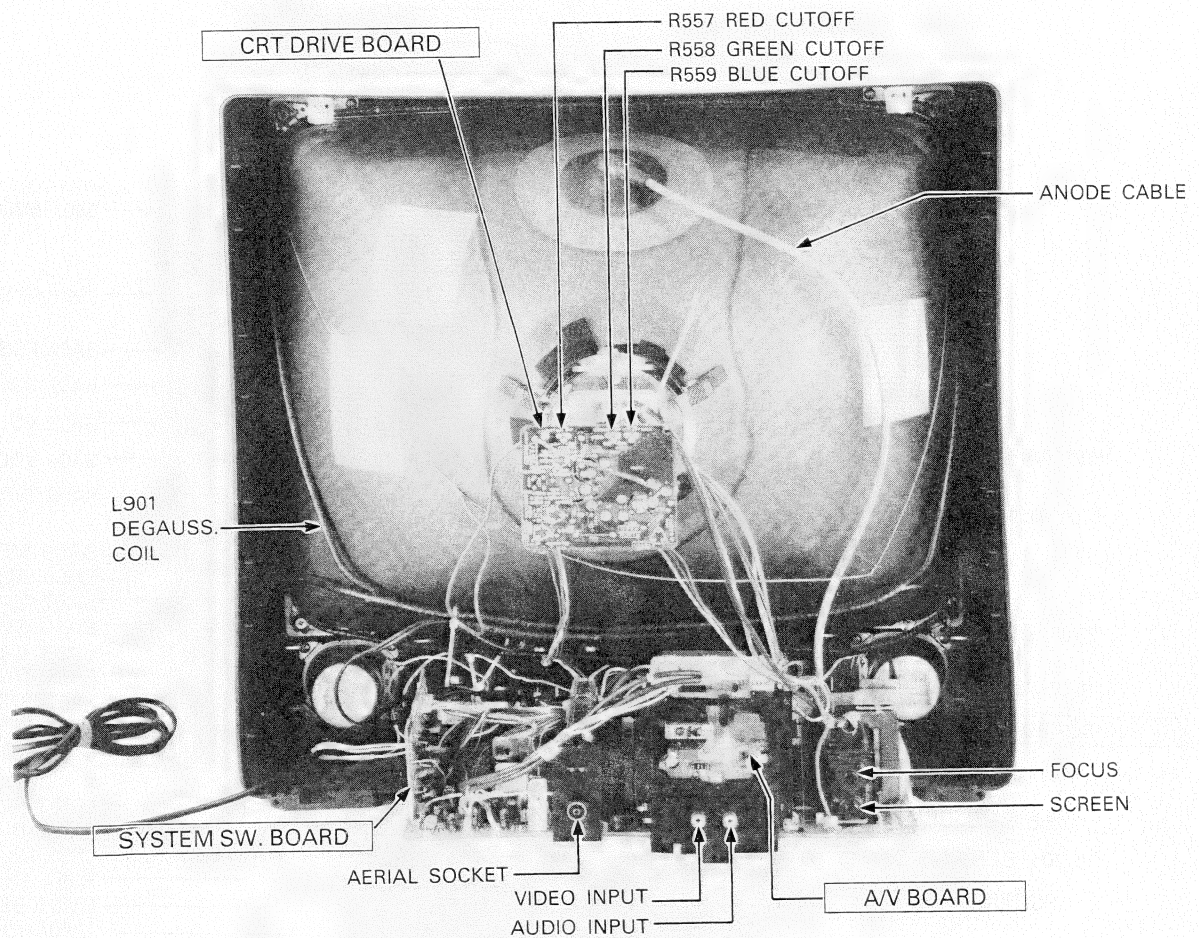


Figure 2. Chassis Rear View

WARNING : BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION" , "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" ON PAGE 2 OF THIS MANUAL.

INSTALLATION AND SERVICE ADJUSTMENTS

GENERAL INFORMATION

All adjustments are thoroughly checked and corrected when the receiver leaves the factory. Therefore the receiver should operate normally and produce proper colour and B/W pictures upon installation. However, several minor adjustments may be required depending on the particular location in which the receiver is operated.

This receiver is shipped completely in cardboard carton. Carefully draw out the receiver from the carton and remove all packing materials.

Plug the power cord into a convenient 110 ~ 245 Volts 50/60Hz AC two pin power outlet.

Turn the receiver ON and adjust the FINE TUNING for best picture detail with the AFC turned OFF.

Check and adjust all the customer controls such as BRIGHTNESS, CONTRAST and COLOUR Controls to obtain natural colour or B/W picture.

AUTOMATIC DEGAUSSING

A degaussing coil is mounted around the picture tube so that external degaussing after moving the receiver is normally unnecessary, providing the receiver is properly degaussed upon installation. The degaussing coil operates for about 1 second after the power to the receiver is switched ON. If the set is moved or faced in a different direction, the power switch must be switched off at least 10 minutes in order that the automatic degaussing circuit operates properly.

Should the chassis or parts of the cabinet become magnetized to cause poor colour purity, use an external degaussing coil. Slowly move the degaussing coil around the faceplate of the picture tube, the sides and front of the receiver and slowly withdraw the coil to a distance of about 2 m. before disconnecting it from AC source. If colour shading still persists, perform the COLOUR PURITY ADJUSTMENT and CONVERGENCE ADJUSTMENTS procedures, as mentioned later.

HIGH VOLTAGE CHECK

CAUTION : There is no HIGH VOLTAGE ADJUSTMENT on this chassis.

1. Connect an accurate high voltage meter to the second anode of the picture tube.
2. Turn on the receiver. Set the BRIGHTNESS and CONTRAST Controls to minimum (zero beam current).
3. High voltage will be measured below 29kV.
4. Rotate the BRIGHTNESS Control to both extremes to be sure the high voltage does not exceed the limit of 29kV under any conditions.

HEIGHT ADJUSTMENT

HEIGHT Control (R351) on MAIN Board changes the size of the picture or pattern, having an equal effect on the top and bottom. Make final adjustment to overscan the mask 2 cm at top and bottom.

FOCUS ADJUSTMENT

Adjust FOCUS Control on FLYBACK TRANS. (T461) for well defined scanning lines in the centre area on the screen.

BELL COIL (LM01) ADJUSTMENT

1. Receive SECAM colour bar signal.
2. Connect the synchroscope to the terminal Pin 2 of LM02.
3. Adjust LM01 for the flat level of amplitude in each colour bar waveform on the scope. (See figure 3.)

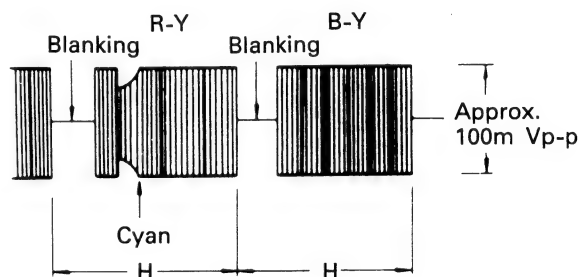


Figure 3.

IDENT COIL (LM04) ADJUSTMENT

1. Receive SECAM colour bar signal.
2. Connect the DC voltmeter (Digital Voltmeter) to the pin 23 of IC501.
3. Adjust LM04 for the maximum indication (approx. DC10V) on the meter.

B-Y, R-Y DEMOD COIL (LM02, LM03) ADJUSTMENT

1. Receive SECAM colour bar signal.
2. Leave the COLOUR, BRIGHTNESS and CONTRAST Controls free.
3. Connect the synchroscope to the pin 62 of IC501.
4. Adjust LM02 so that the white level in picture part reaches to the vertical retrace line. (See figure 3.)
5. Then change the connection of synchroscope from the pin 62 to the pin 60 of IC501.
6. Adjust LM03 so that the white level in picture part reaches to the vertical retrace line. (See figure 4.)

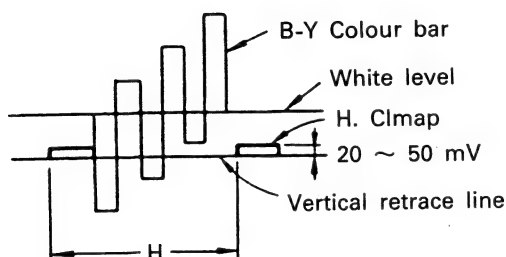


Figure 3.

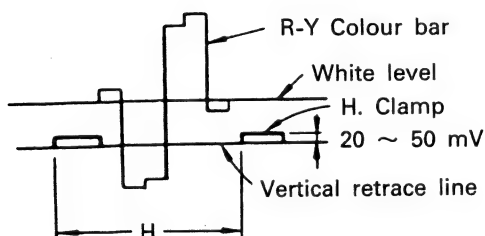


Figure 4.

PAL MATRIX ADJUSTMENT

1. Turn in the colour programme PAL Philips pattern.
2. Set the COLOUR Control VR. to obtain the proper colour.
3. If the PAL MATRIX adjustment is in correct, the Venetian Blind would appear in the colour bars area. This case needs the adjustment.
4. At the first, adjust DL PHASE ADJ. Coil (L551) to minimize the Venetian Blind.
5. Next adjust 1H-DL ADJ. VR (R551) to minimize the Blind.
6. Remove the capacitor, and if the Venetian Blind still remains, adjust 1H-DL PHASE ADJ. Coil (L551) to minimize the Blind again.
7. Repeat the item 5 and 6 procedures, adjust the R551 and L551 until the Blind does not appear when the capacitor is connected.

SIF DET. ADJUSTMENT L651 FOR 6.0MHz

1. Set the system switch (SA10) to the PAL/SECAM position.
2. Supply +9V bias to SIF SW.
3. Supply +3V DC to terminal "TP-14" on Main Board through 100 ohm resistor.
4. Connect the 6.0MHz signal (Modulation : 400Hz/15kHz deviation, 100dB μ) of SIF S.G. to pin 13 of IC101 through a capacitor 0.01 μ F.
5. Connect the millivoltmeter to pin 8 of IC101.
6. Adjust L651 for the maximum reading on the meter.

CN52 FOR 4.5MHz

1. Set the system switch (SA10) to the 3.58 NTSC position.
2. Short pin 25 of ICS01 to ground.
3. Supply +3V DC to terminal "TP-14" on Main Board to deactivate PIF circuit.
4. Connect the 4.5 MHz signal (Modulation : 400Hz/7.5kHz deviation, 100dB μ) of SIF S.G. to pin 13 of IC101 through a capacitor 0.01 μ F.
5. Connect the millivoltmeter to pin 8 of IC101.
6. Adjust the variable capacitor (CN52) for the maximum reading on the meter.

SIF DET. ADJUSTMENT 6.0MHz OSC. COIL (L672)

1. Supply +12V to the SYSTEM SW. Board.
2. Short the C677 (R693 side) through a 10k ohm resistor to ground.
3. Apply the 6.0MHz signal (No modulation, 100dB μ) of SIF S.G. to Base of Q672 through a capacitor 0.01 μ F.
4. Connect oscilloscope to pin 9 of ICS01.
5. Adjust L672 so that the response on oscilloscope can be maximum.

SIF DET. ADJUSTMENT 5.5MHz OSC. COIL (L671)

1. Supply +12V to the SYSTEM SW. Board.
2. Supply +9V to Anode of D302 through 10k ohm resistor.
3. Apply the 5.5MHz signal (No modulation, 100dB μ) of SIF S.G. to pin 27 of ICS01 through a capacitor 0.01 μ F.
4. Connect oscilloscope or DC voltmeter to C677 (R693 side.)
5. Adjust L671 so that the response on oscilloscope or DC voltmeter can become +4.5V.

COLOUR PURITY ADJUSTMENT

Note : Before attempting any purity adjustments, the receiver should be operated for at least fifteen minutes. Purity adjustment requires Rubber Wedge kit.

1. Demagnetize the picture tube and cabinet using a degaussing coil.
2. Turn the CONTRAST and BRIGHTNESS Controls to maximum.
3. Adjust RED and BLUE CUT OFF controls (R557 and R559) to provide only a green raster. Advance the GREEN CUT OFF control (R558) if necessary.
4. Loosen the clamp screw holding the yoke, and slide the yoke backward or forward to provide vertical green belt (zone) in the picture screen.
5. Remove the Rubber Wedges.
6. Rotate and spread the tabs of the purity magnet (See figure 7) around the neck of the picture tube until a green belt is obtained in the centre of the screen. And at the same time, centre the raster vertically by adjusting the magnet.
7. Move the yoke slowly forward or backward until a uniform green screen is obtained. Tighten the clamp screw.
8. Check the purity of the red and blue raster by adjusting the CUT OFF Controls.
9. Tighten the clamp screw of the yoke temporarily.
10. Obtain a white raster; referring to "CRT GREY SCALE ADJUSTMENT".
11. Proceed with convergence adjustment.

CRT GREY SCALE ADJUSTMENT

1. Tune in an active channel.
2. Turn the SCREEN Control (on T461) fully counter clockwise.
3. Set the RED, GREEN and BLU CUT OFF Controls (R557, R558, R559) to the mid position.
4. Rotate the SCREEN Control gradually clockwise until the first horizontal line of a colour (RED, GREEN or BLUE) appears slightly on the screen. Set the SCREEN Control to this position.
5. Adjust the CUT OFF Controls to obtain the slightly lighted horizontal lines in the same levels of three colours (RED, GREEN and BLUE).
The lines may look like white if the CUT OFF Controls are adjusted properly.
6. Return the SERVICE SW. (S201) in the Receiving position.
7. Set the BRIGHTNESS and CONTRAST Controls to obtain dark grey raster. Then check the white balance in low brightness. If the white balance is not proper, retouch the CUT OFF Controls to obtain a good white balance in both low and high light areas.

SUB-BRIGHTNESS ADJUSTMENT

1. Tune in a colour programme.
2. Set the CONTRAST Control to the maximum and the BRIGHTNESS Control to the centre.
3. Set the COLOUR Control to the centre.
4. Set the SUB-BRIGHT. Control (R255) to the centre and leave the receiver for five minutes in this state.
5. Watching the picture well, adjust the SUB-BRIGHT. Control in the position where the picture does not show evidence of blooming in high bright area and not appear too dark in low bright portion.
6. Check the proper picture variation by rotating the CONTRAST and BRIGHTNESS Controls to both extremes.
7. If the picture does not appear dark with the CONTRAST and BRIGHTNESS Controls turned to the minimum, or not appear bright with the controls turned to the maximum, adjust the SUB-BRIGHT. Control again for the acceptable picture.

CONVERGENCE ADJUSTMENTS

Note: Before attempting any convergence adjustments, the receiver should be operated for at least fifteen minutes.

■ Centre Convergence Adjustment

1. Receive crosshatch pattern with a colour bar signal generator.
2. Adjust the BRIGHTNESS and CONTRAST Controls for well defined pattern.
3. Adjust two tabs of the 4-Pole Magnets to change the angle between them (See figure 6.) and superimpose red and blue vertical lines in the centre area of the picture screen. (See figure 7.)
4. Turn the both tabs at the same time keeping the constant angle to superimpose red and blue horizontal lines at the centre of the screen. (See figure 7.)
5. Adjust two tabs of 6-Pole Magnets to superimpose red/blue line and green one. Adjusting the angle affects the vertical lines and rotating both magnets affects the horizontal lines.
6. Repeat adjustments 3, 4, 5 with understanding red, green and blue movement, because 4-Pole Magnets and 6-Pole Magnets have mutual affection and it makes dots movement complex.

■ Circumference Convergence Adjustment

1. Loosen the clamping screw of deflection yoke to allow the yoke to tilt.
2. Put a wedge as shown in figure 5. temporarily. (Do not remove cover paper on adhesive part of the wedge.)
3. Tilt front of the deflection yoke up or down to obtain better convergence in circumference. (See figure 7.) Push the mounted wedge into the space between picture tube and yoke to fix the yoke temporarily.
4. Put other wedge into bottom space and remove the cover paper to stick.
5. Tilt front of the yoke right or left to obtain better convergence in circumference. (See figure 7.)
6. Keep the yoke position and put another wedge in either upper space. Remove cover paper and stick the wedge on picture tube to fix the yoke.
7. Detach the temporarily mounted wedge and put it in another upper space. Stick it on picture tube to fix the yoke.
8. After fixing three wedges, recheck overall convergence. Tighten the screw firmly to fix the yoke and check the yoke is firm.
9. stick 3 adhesive tapes on wedges.

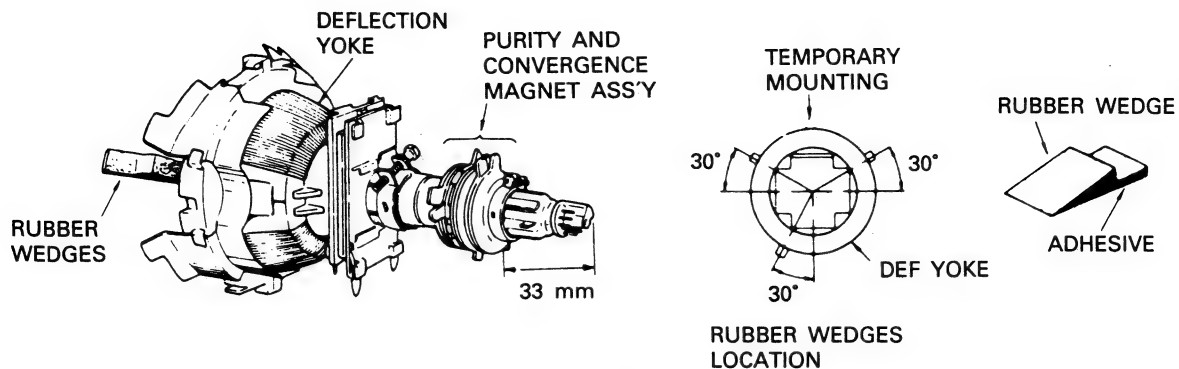


Figure 5.

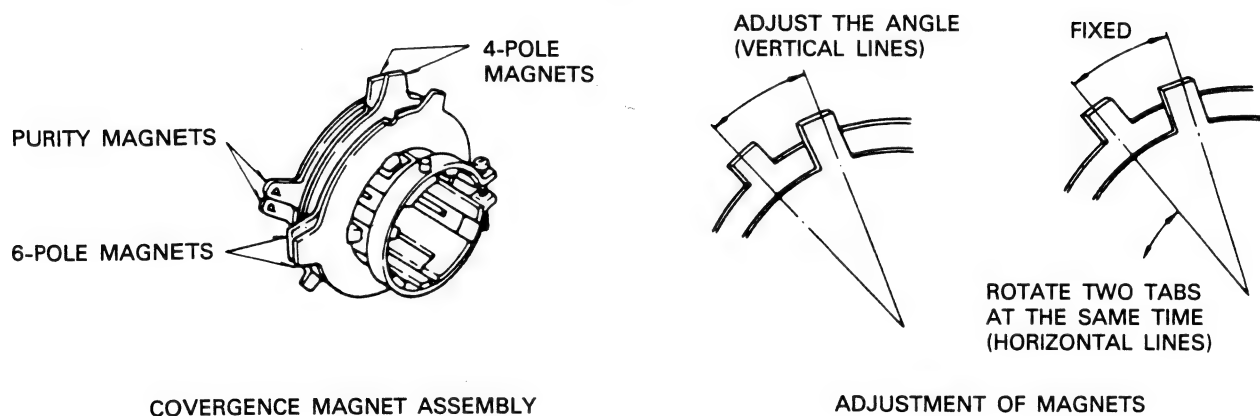
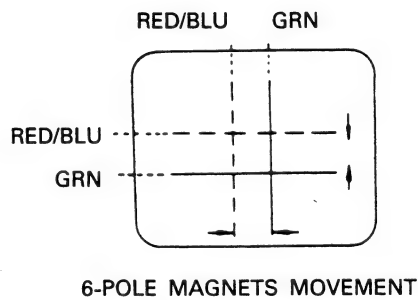
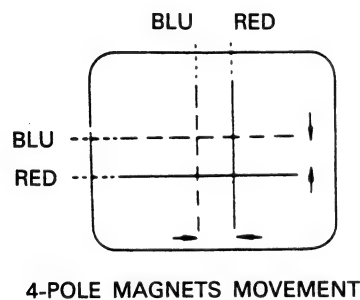
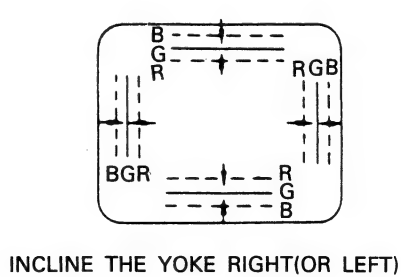
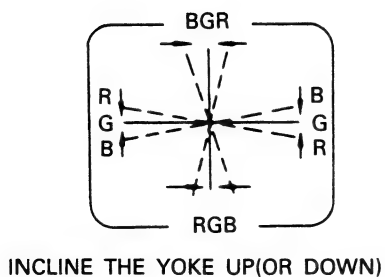


Figure 6.



Center Convergence by Convergence Magnets



Circumference Convergence by DEF Yoke

Figure 7. Dot Movement Pattern.

PICTURE I-F TRAP ALIGNMENT

NOTE Perform this adjustment prior to I-F SWEEP and AFC ALIGNMENTS.
 GENERAL Refer to figures 8 for the equipment connection.
 PRELIMINARY STEPS 1. Disconnect the solder link SL-1(●) see figure 8) on the foil side of the Main Board.
 2. Supply +12 volts to the Main Board.
 SWEEP/MARKER GENERATOR Connect to the point ④ as shown in figure 8 on the Main Board.
 OSCILLOSCOPE Connect through the detector (See figure 10.) to the emitter of QA02 on the Main Board.

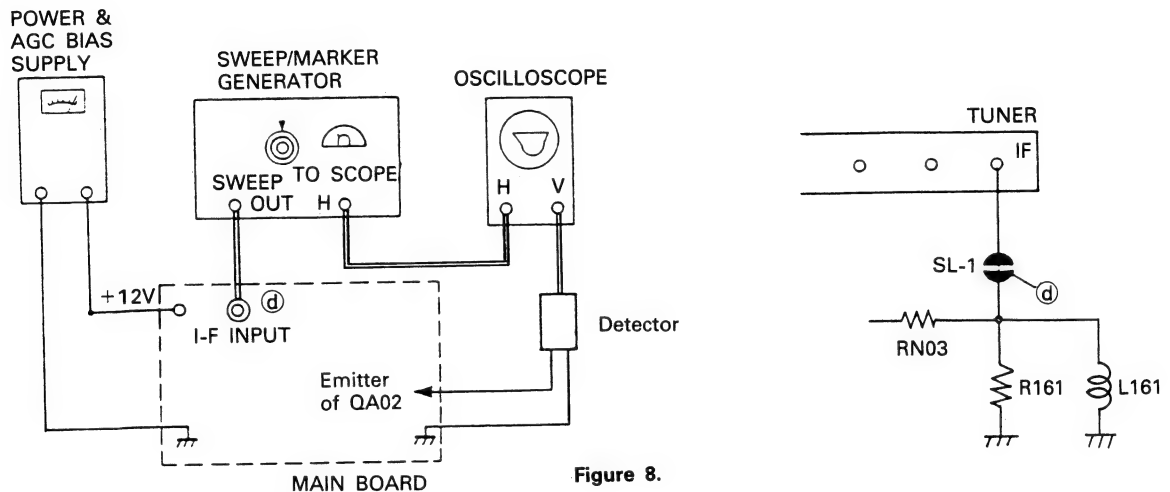


Figure 8.

STEP	SWEEP/MARKER GENERATOR	ADJUST	PROCEDURE
TN01 33.5MHz / TRAP ALIGNMENT Control the sweep out put for easy alignment. Set the 3.58 NTSC SYSTEM.			
4.5MHz Trap Coil	33.5MHz Marker "ON"	TN01	<ul style="list-style-type: none"> ● Set the IF Marker for 33.5MHz (P-4.5M) ● Adjust TN01 so that 33.5MHz marker point is placed at bottom of response. (See figure 9.)

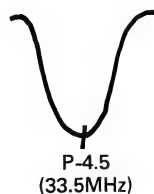


Figure 9. Trap Response

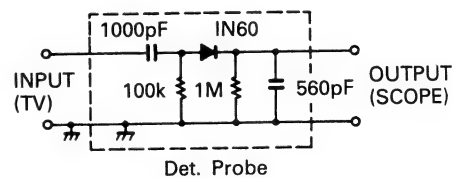


Figure 10. Detector Diagram

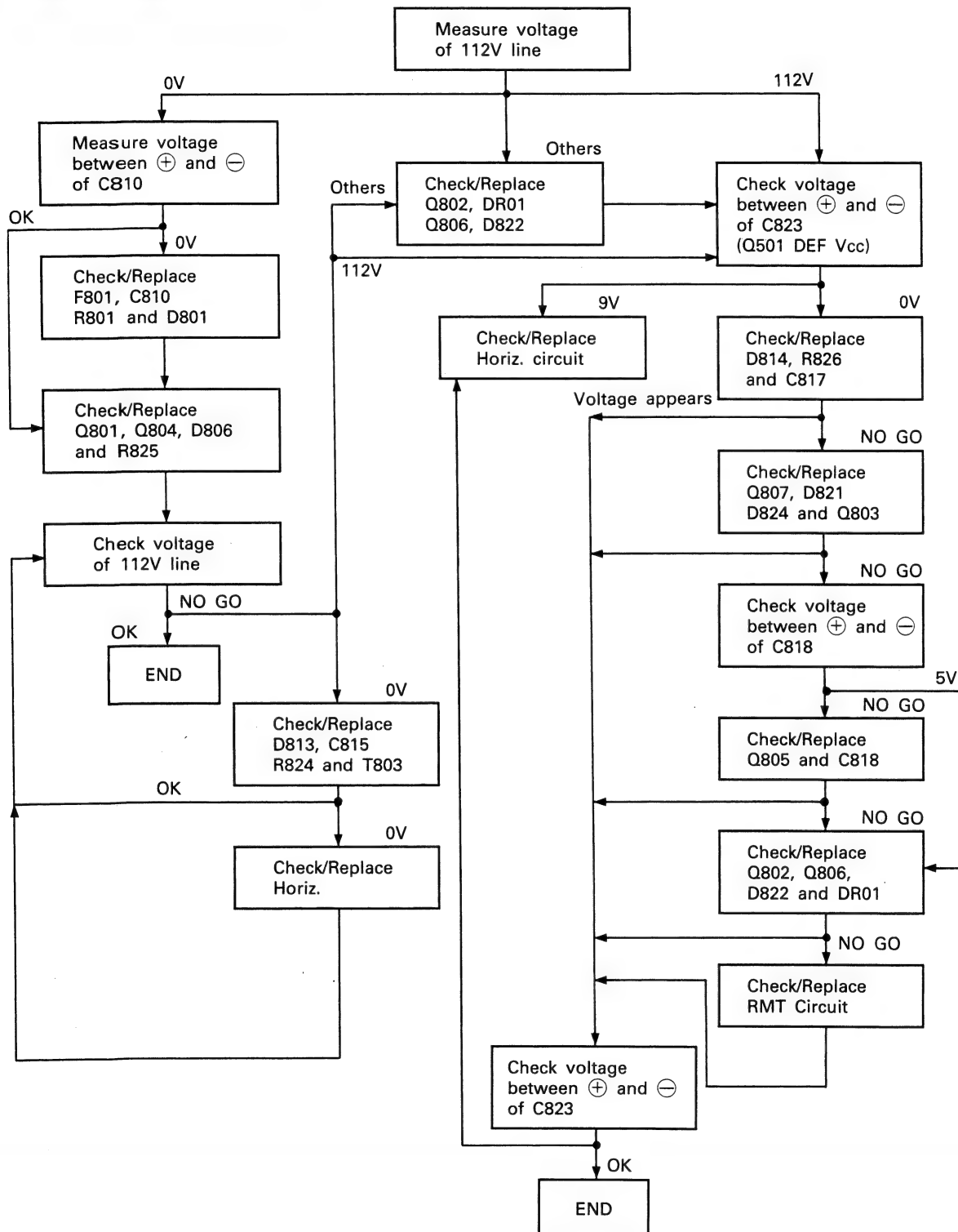
TROUBLESHOOTING CHARTS

The following charts are devoted to troubleshooting which, if followed carefully, will assist you in tracking down a fault to the correct stage.

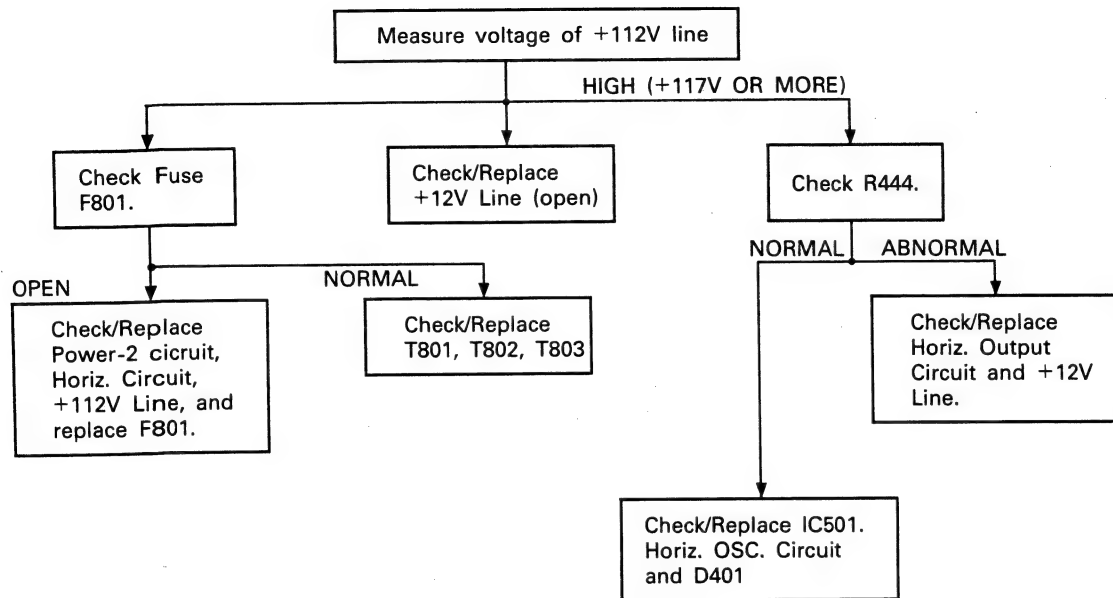
In order to utilize the charts (fault trees), firstly establish the complaint, i.e. – No Raster, No Sound.

Locate the chart applicable and then progress through the various alternatives until a final block indicates the offending components or stage.

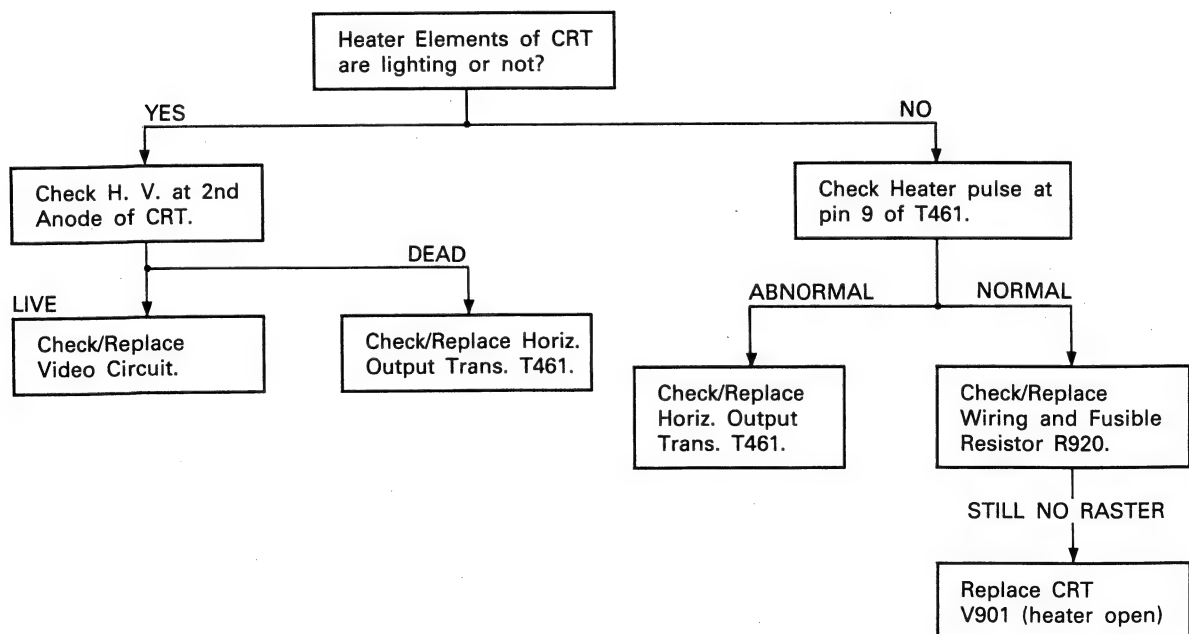
1. NO RASTER AND NO SOUND



2. NO RASTER (NOISE OR WEAK SOUND)

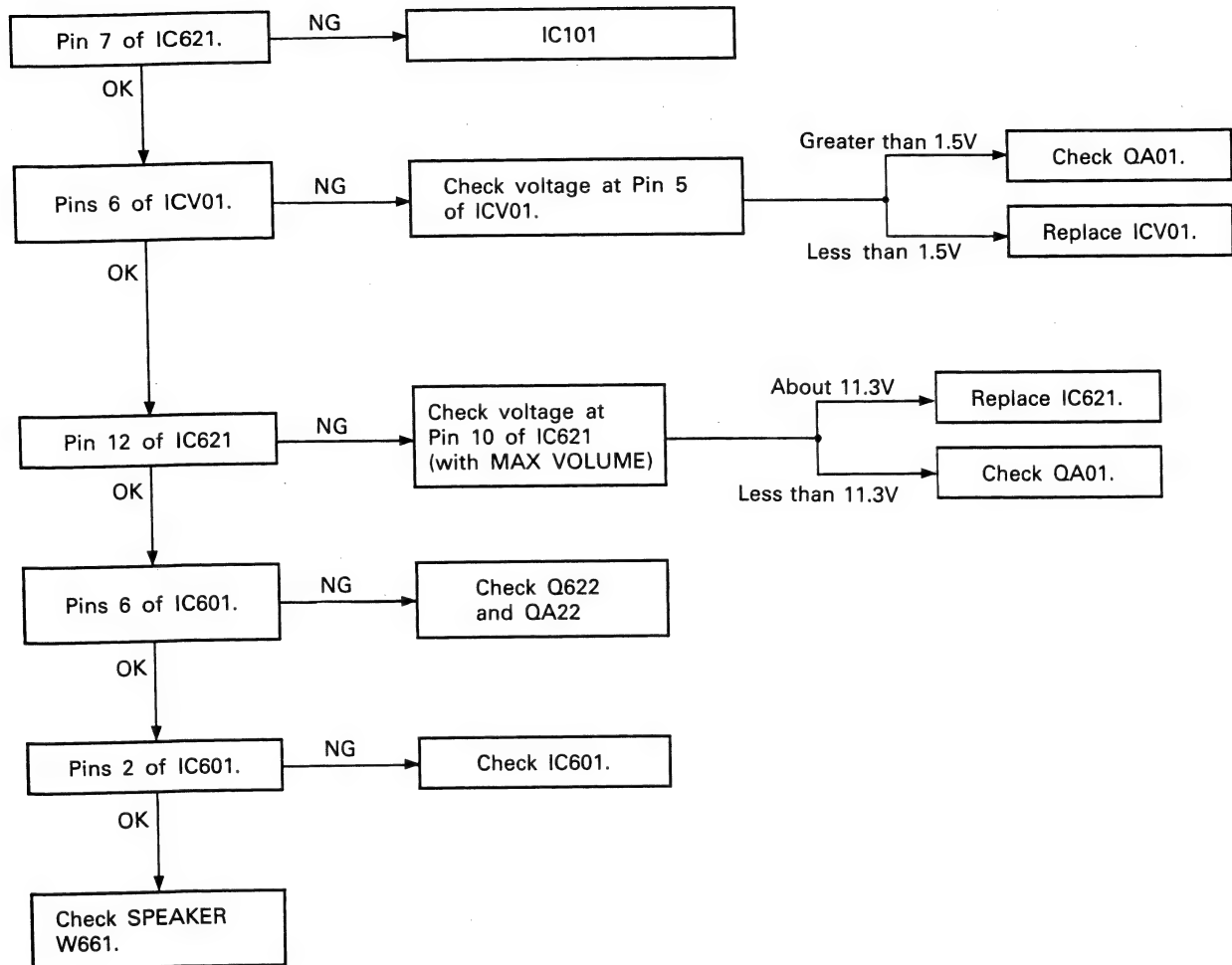


3. NO RASTER (SOUND OK)



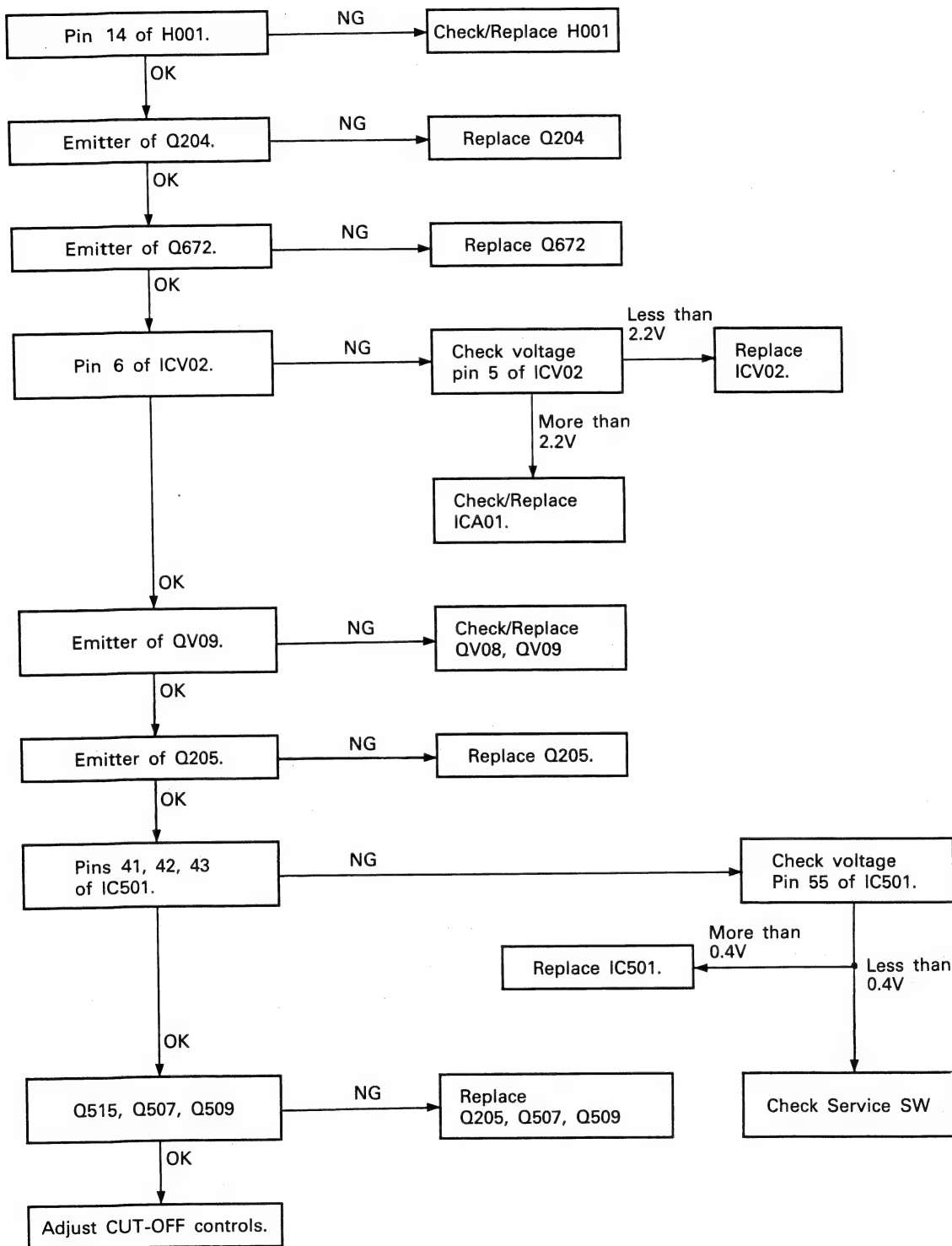
4. NO SOUND

NOTE: Check the sound signal waveform for shaded area below.



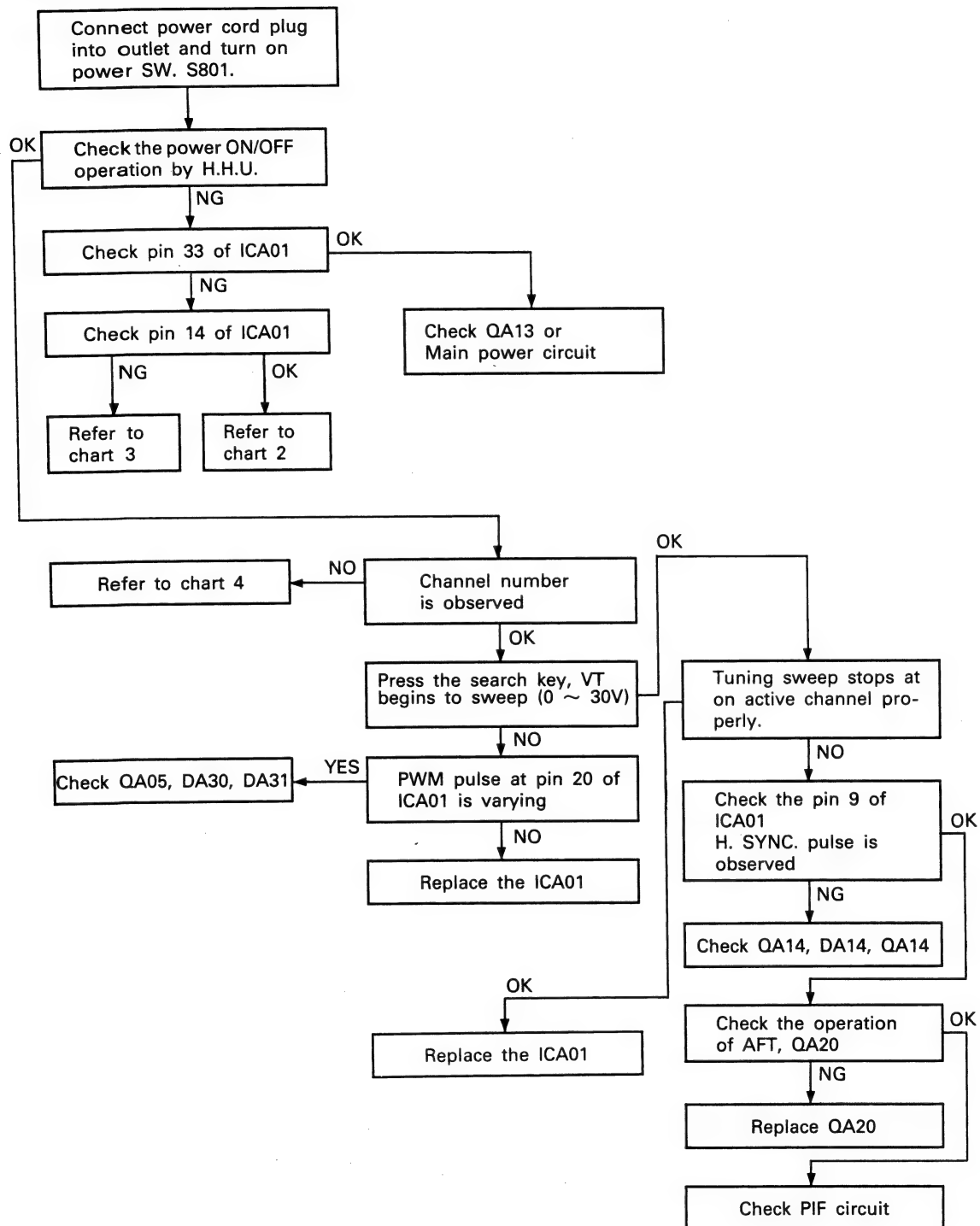
5. NO PICTURE

Check video signal waveform for shaded area below.



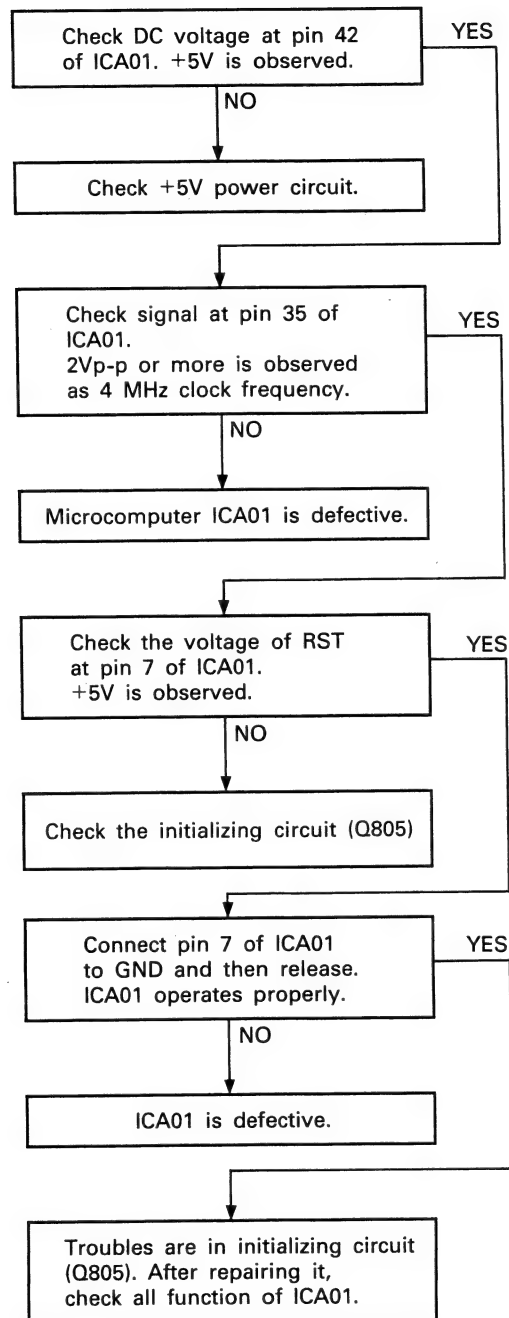
6. CHANNEL SELECTOR TROUBLE

[CHART 1]



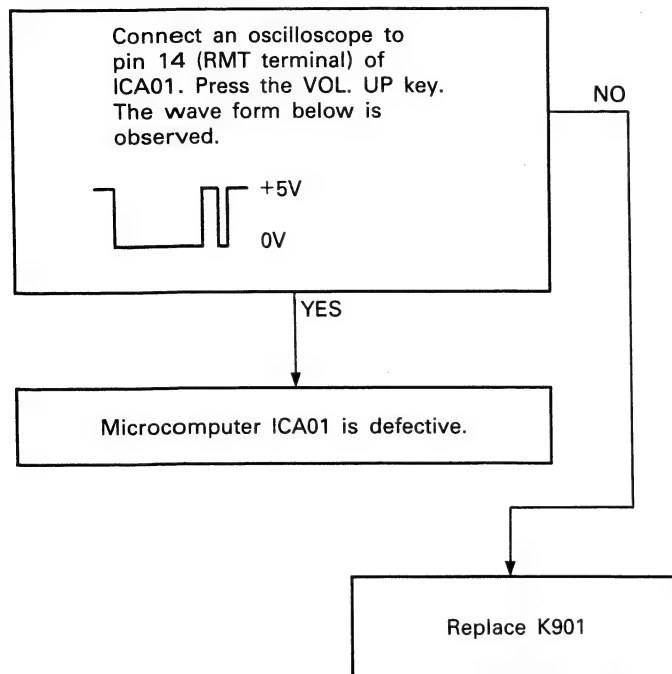
[CHART 2] Microcomputer (ICA01) Operation Check

Note: Before checking Microcomputer, check that control buttons and their connection work properly.



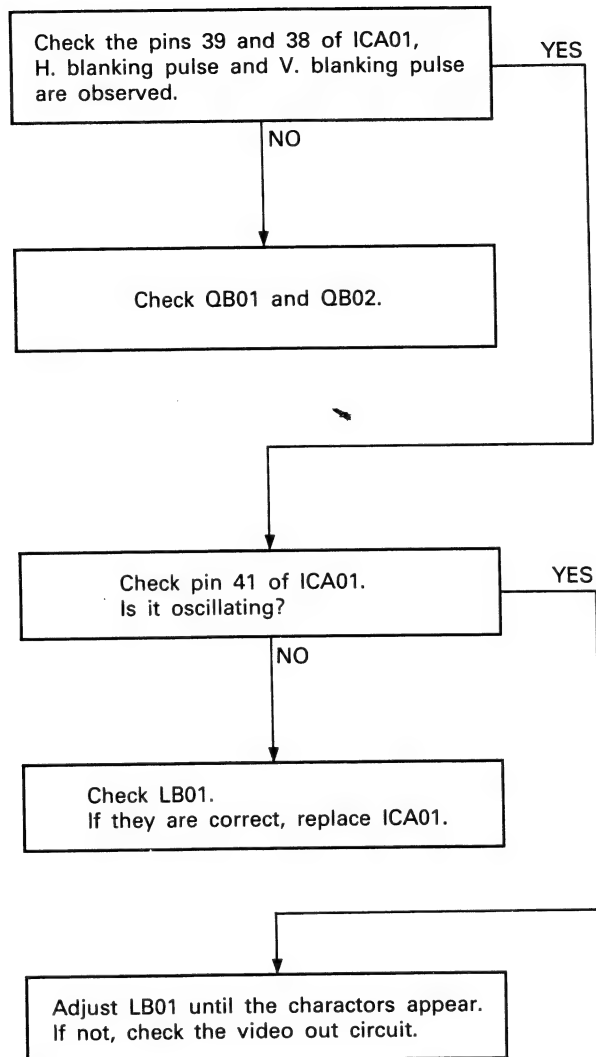
[CHART 3] Remote Control Operation Check

Note: Before checking RMT operation, check that key operation on TV set is proper.

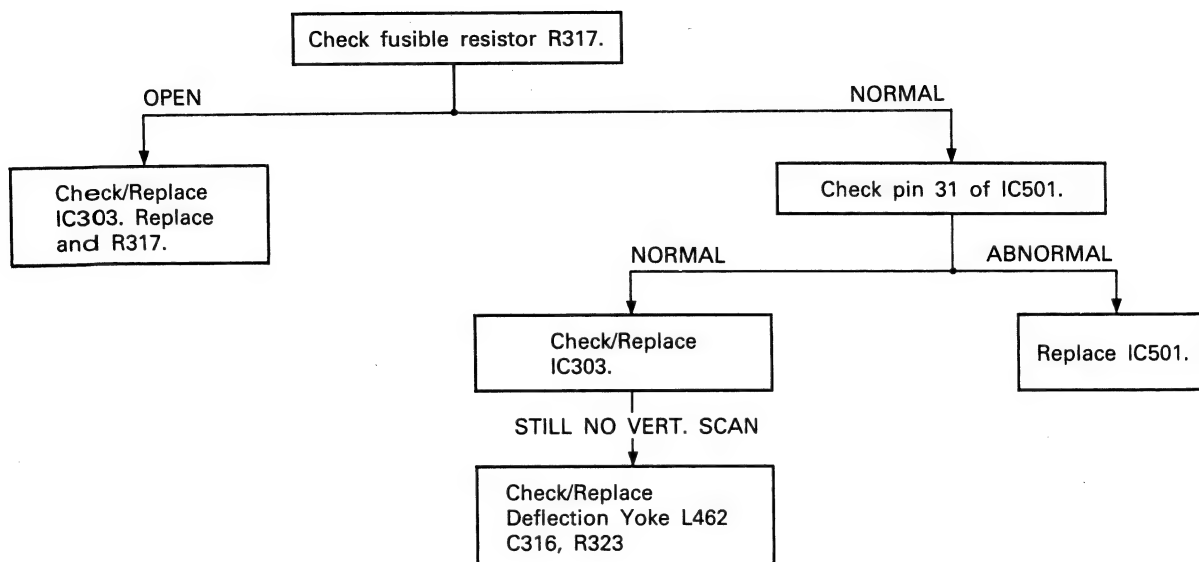


[CHART 4]

(1) On Screen Display Operation Check



7. NO VERT. SCAN (ONE HORIZ. LINE RASTER)



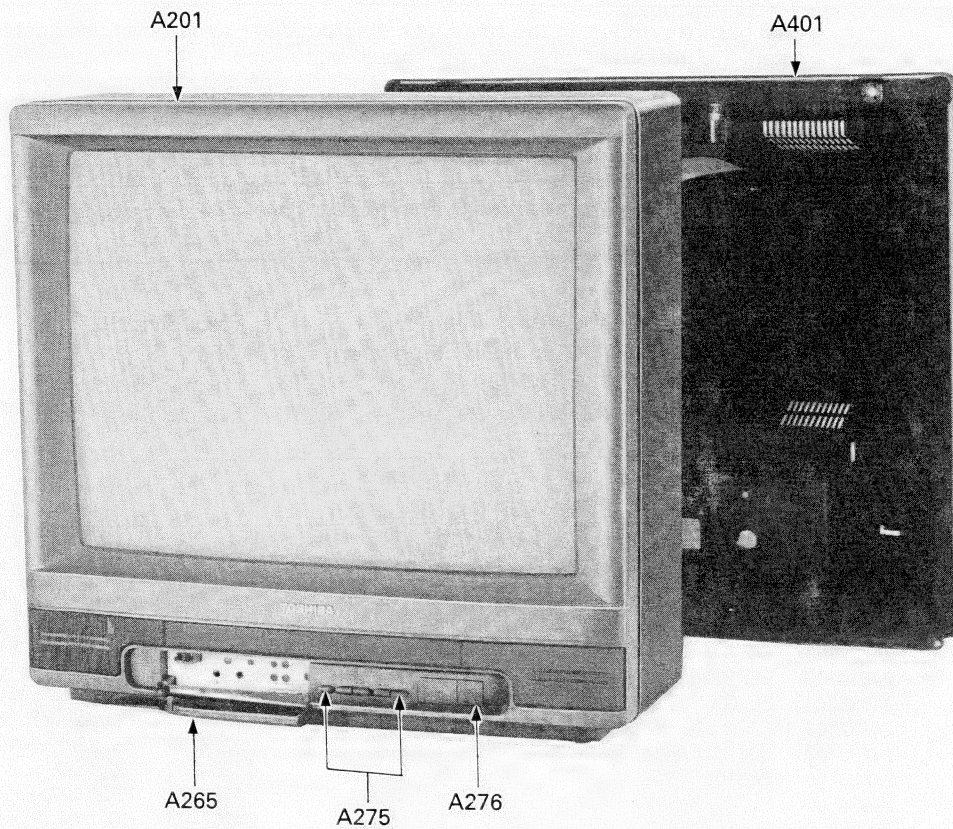
8. OUT OF VERT. SYNC. AND HORIZ. SYNC.

Check/Replace Sync. Circuit pin 33 of IC501.

9. OUT OF HORIZ. SYNC.

Check/Replace Horiz. OSC Circuit and Horiz. AFC Circuit connected to Pins 36, 37 and 38 of IC501.
Check/Replace IC501.

CABINET REPLACEMENT PARTS LIST



Location No.	Part No.	Description
A201	23417188	Front Cover
A265	23422387	Door Proper
A269	70368125	Push Catch for Door
A272	23431031	Ornament (L)
A273	23431032	Ornament (R)
A275	23443186	Button (5Key)
A276	23443187	Button (Power)
A277	23836883	Spring
A280	70393022	Nut
A401	23422489	Back Cover
A403	23995954	Level, Model Number
A701	23523119	Case
A702A	23934296	Packing, Top
A702B	23934297	Packing, Bottom
B406	23451169	Holder, A/V Terminal
Y101	23994473	Owner's Guidebook
Y106	23144959	Fuse, 3.15A
Y108	23122780	AC Adaptor, 2P
Y125	23293988	Adapter, Aerial Matching
Y126	23124864	Aerial, VHF Telescopic

CHASSIS REPLACEMENT PARTS LIST

WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION", "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" ON PAGE 2 OF THIS MANUAL.

CAUTION: The international hazard symbols in the schematic diagram and the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list. The mounting position of replacements is to be identical with originals. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE on page 2. Do not degrade the safety of the receiver through improper servicing.

NOTICE: The part number must be used when ordering parts, in order to assist in processing, be sure to include the Model number and Description.

ABBREVIATIONS:

Capacitors CD : Ceramic Disk PF : Plastic Film EL : Electrolytic
Resistors CF : Carbon Film CC : Carbon Composition MF : Metal Film
OMF : Oxide Metal Film VR : Variable Resistor FR : Fusible Resistor
(All CD and PF capacitors are $\pm 5\%$, 50V and all resistors, $\pm 5\%$, 1/6W unless otherwise noted.)

Location No.	Part No.	Description
CAPACITORS		
C161	24232103	CD, 0.01 μ F, +80%, -20%
C201	24636100	EL, 10 μ F, 50V
C202	24797101	EL, 100 μ F, 50V
C203	24232103	CD, 0.01 μ F, +80%, -20%
C204	24636100	EL, 10 μ F, 50V
C205	24636478	EL, 0.47 μ F, 50V
C208	24232103	CD, 0.01 μ F, +80%, -20%
C209	24232103	CD, 0.01 μ F, +80%, -20%
C210	24636100	EL, 10 μ F, 50V
C213	24636100	EL, 10 μ F, 50V
C214	24636010	EL, 1 μ F, 50V
C215	24636100	EL, 10 μ F, 50V
C240	24636478	EL, 0.47 μ F, 50V
C301	24636229	EL, 2.2 μ F, 50V
C302	24212272	CD, 2700pF, $\pm 10\%$
C303	24617891	EL, 1 μ F, $\pm 10\%$, 50V
C304	24212102	CD, 1000pF, $\pm 10\%$
C307	24232103	CD, 0.01 μ F, +80%, -20%
C309	24214681	CD, 680pF, $\pm 10\%$, 500V
C311	24796102	EL, 1000 μ F, 35V
C314	24435510	CD, 51pF, 500V
C315	24095677	PF, 0.1 μ F, $\pm 10\%$, 100V
C316	24795332	EL, 3300 μ F, 25V
C317	24617998	EL, 1 μ F, $\pm 10\%$, 50V
C321	24595222	PF, 2200pF, 100V
C323	24212332	CD, 3300pF, $\pm 10\%$
C325	24796101	EL, 100 μ F, 35V
C326	24538563	PF, 0.056 μ F
C402	24353241	CD, 240pF
C403	24636339	EL, 3.3 μ F, 50V
C405	24593203	PF, 0.02 μ F
C406	24538183	PF, 0.018 μ F
C407	24593243	PF, 0.024 μ F
C408	24636100	EL, 10 μ F, 50V
C409	24232103	CD, 0.01 μ F, +80%, -20%
C411	24598471	PF, 470pF
C416	24214271	CD, 270pF, $\pm 10\%$, 500V
C417	24214102	CD, 1000pF, $\pm 10\%$, 500V
△ C440	24095893	PF, 6200pF, $\pm 3\%$, 1600V
C441	24214221	CD, 220pF, $\pm 10\%$, 500V

Location No.	Part No.	Description
C442	24095949	PF, 0.33 μ F, 200V
△ C444	24442821	CD, 820pF, $\pm 10\%$, 2kV
C445	24833223	PF, 0.022 μ F, $\pm 10\%$, 200V
C446	24642101	EL, 100 μ F, 160V
C447	24644100	EL, 10 μ F, 250V
C448	24794222	EL, 2200 μ F, 16V
C450	24794471	EL, 470 μ F, 16V
△ C463	24212222	CD, 2200pF, $\pm 10\%$
C501	24206220	EL, 22 μ F, 50V
C504	24353200	CD, 20pF
C505	24538273	PF, 0.027 μ F
C506	24232103	CD, 0.01 μ F, +80%, -20%
C507	24538103	PF, 0.01 μ F
C508	24085028	EL, 2.2 μ F, 25V, Non-Polar
C509	24353330	CD, 33pF
C510	24232103	CD, 0.01 μ F, +80%, -20%
C511	24232103	CD, 0.01 μ F, +80%, -20%
C512	24232103	CD, 0.01 μ F, +80%, -20%
C513	24436181	CD, 180pF
C514	24436181	CD, 180pF
C515	24636479	EL, 4.7 μ F, 50V
C516	24538104	PF, 0.1 μ F
C517	24538104	PF, 0.1 μ F
C518	24232103	CD, 0.01 μ F, +80%, -20%
C520	24636478	EL, 0.47 μ F, 50V
C521	24538474	PF, 0.47 μ F
C522	24538474	PF, 0.47 μ F
C523	24538474	PF, 0.47 μ F
C524	24232103	CD, 0.01 μ F, +80%, -20%
C527	24232103	CD, 0.01 μ F, +80%, -20%
C531	24436361	CD, 360pF
C532	24436301	CD, 300pF
C533	24436271	CD, 270pF
C534	24794221	EL, 220 μ F, 16V
C536	24636478	EL, 0.47 μ F, 50V
C545	24436820	CD, 82pF
C546	24436820	CD, 82pF
C547	24436820	CD, 82pF
C560	24436101	CD, 100pF
C561	24436330	CD, 33pF
C562	24232103	CD, 0.01 μ F, +80%, -20%

Location No.	Part No.	Description
C563	24436360	CD, 36pF
C564	24636100	EL, 10 μ F, 50V
C565	24232103	CD, 0.01 μ F, +80%, -20%
C601	24436470	CD, 47pF
C602	24436470	CD, 47pF
C605	24538104	PF, 0.1 μ F
C607	24538104	PF, 0.1 μ F
C608	24795101	EL, 100 μ F, 25V
C609	24636010	EL, 1 μ F, 50V
C610	24593392	PF, 3900pF
C611	24538333	PF, 0.033 μ F
C615	24796102	EL, 1000 μ F, 35V
C618	24764222	EL, 2200 μ F, \pm 20%, 25V
C620	24436101	CD, 100pF
C622	24232103	CD, 0.01 μ F, +80%, -20%
C623	24538473	PF, 0.047 μ F
C624	24797470	EL, 47 μ F, 50V
C625	24358470	CD, 47pF
C626	24358120	CD, 12pF
C627	24538473	PF, 0.047 μ F
C628	24232103	CD, 0.01 μ F, +80%, -20%
C629	24636100	EL, 10 μ F, 50V
C630	24232103	CD, 0.01 μ F, +80%, -20%
C631	24636339	EL, 3.3 μ F, 50V
C632	24206010	EL, 1 μ F, 50V
C633	24636100	EL, 10 μ F, 50V
C634	24358680	CD, 68pF
C635	24633220	EL, 22 μ F, 16V
C671	24232103	CD, 0.01 μ F, +80%, -20%
C672	24232103	CD, 0.01 μ F, +80%, -20%
C673	24436471	CD, 470pF
C674	24436471	CD, 470pF
C676	24436220	CD, 22pF
C677	24636010	EL, 1 μ F, 50V
C678	24633100	EL, 10 μ F, 16V
C679	24232103	CD, 0.01 μ F, +80%, -20%
△ C801	24095951	PF, 0.1 μ F, \pm 20%, AC250V
△ C802	24095951	PF, 0.1 μ F, \pm 20%, AC250V
C803	24092281	CD, 4700pF, \pm 20%, AC250V
C804	24092281	CD, 4700pF, \pm 20%, AC250V
C805	24092281	CD, 4700pF, \pm 20%, AC250V
C806	24092281	CD, 4700pF, \pm 20%, AC250V
C810	24086915	EL, 270 μ F, \pm 20%, 450V
C811	24538474	PF, 0.47 μ F
C812	24642339	EL, 3.3 μ F, 160V
C813	24092024	CD, 220pF, \pm 10%, 2kV
C814	24092028	CD, 470pF, \pm 10%, 2kV
C815	24538224	PF, 0.22 μ F
C816	24212272	CD, 2700pF, \pm 10%
C817	24795102	EL, 1000 μ F, 25V
C818	24794470	EL, 47 μ F, 16V
C819	24633220	EL, 22 μ F, 16V
C820	24214152	CD, 1500pF, \pm 10%, 500V
C821	24086953	EL, 220 μ F, \pm 20%, 160V
C822	24795100	CD, 33pF, 25V
C823	24538474	PF, 0.47 μ F
C824	24214181	CD, 180pF, \pm 10%, 500V
C825(U902A)	24092029	CD, 560pF, \pm 10%, 2kV
C825(U903B)	24204470	EL, 47 μ F, \pm 20%, 25V
C826	24203470	EL, 47 μ F, \pm 20%, 16V
C827	24232103	CD, 0.01 μ F, +80%, -20%
C901	24644010	EL, 1 μ F, 250V
C902	24095931	PF, 2200pF, 1600V
CA01	24794470	EL, 47 μ F, 16V

Location No.	Part No.	Description
CA02	24232103	CD, 0.01 μ F, +80%, -20%
CA03	24633100	EL, 10 μ F, 16V
CA06	24232103	CD, 0.01 μ F, +80%, -20%
CA09	24436391	CD, 390pF
CA10	24436221	CD, 220pF
CA11	24538104	PF, 0.1 μ F
CA12	24538104	PF, 0.1 μ F
CA15	24636229	EL, 2.2 μ F, 50V
CA17	24538104	PF, 0.1 μ F
CA18	24636229	EL, 2.2 μ F, 50V
CA19	24232103	CD, 0.01 μ F, +80%, -20%
CA20	24212101	CD, 100pF, \pm 10%
CA22	24232103	CD, 0.01 μ F, +80%, -20%
CA23	24212222	CD, 2200pF, \pm 10%
CA29	24538104	PF, 0.1 μ F
CA30	24794470	EL, 47 μ F, 16V
CA32	24232103	CD, 0.01 μ F, +80%, -20%
CA45	24232103	CD, 0.01 μ F, +80%, -20%
CA46	24794101	EL, 100 μ F, 16V
CA47	24794101	EL, 100 μ F, 16V
CA50	24212102	CD, 100pF, \pm 10%
CB01	24232103	CD, 0.01 μ F, +80%, -20%
CB02	24212561	CD, 560pF, \pm 10%
CM01	24436201	CD, 200pF
CM02	24436201	CD, 200pF
CM03	24340080	CD, 8pF, \pm 0.25pF
CM04	24340080	CD, 8pF, \pm 0.25pF
CM06	24357270	CD, 27pF
CM07	24538273	PF, 0.027 μ F
CN01	24795330	EL, 33 μ F, 25V
CN02	24232103	CD, 0.01 μ F, +80%, -20%
CN04	24232103	CD, 0.01 μ F, +80%, -20%
CN12	24436470	CD, 47pF
CN13	24232103	CD, 0.01 μ F, +80%, -20%
CN14	24436270	CD, 27pF
CN21	24353150	CD, 15pF
CN22	24538273	PF, 0.027 μ F
CN23	24353300	CD, 30pF
CN31	24436470	CD, 47pF
CN32	24436470	CD, 47pF
CN33	24232103	CD, 0.01 μ F, +80%, -20%
CN52	24093990	Variable Capacitor, 5.5 to 30pF, 100V
CR02	24794101	EL, 100 μ F, 16V
CS01	24232103	CD, 0.01 μ F, +80%, -20%
CS02	24795101	EL, 100 μ F, 25V
CV01	24085002	EL, 2.2 μ F, 50V, Non-Polar
CV02	24636229	EL, 2.2 μ F, 50V
CV03	24232103	CD, 0.01 μ F, +80%, -20%
CV04	24636229	EL, 2.2 μ F, 50V
CV05	24232103	CD, 0.01 μ F, +80%, -20%
CV07	24203100	EL, 10 μ F, \pm 20%, 16V
CV08	24232103	CD, 0.01 μ F, +80%, -20%
CV09	24203470	EL, 47 μ F, \pm 20%, 16V
CV10	24232103	CD, 0.01 μ F, +80%, -20%
CV11	24205479	EL, 4.7 μ F, 35V
CV13	24203470	EL, 47 μ F, \pm 20%, 16V
CV14	24094656	CD, 2200pF, \pm 20%, AC400V
CV15	24232103	CD, 0.01 μ F, +80%, -20%
CV16	24203470	EL, 47 μ F, \pm 20%, 16V
CV17	24793102	EL, 1000 μ F, 10V
CV18	24436181	CD, 180pF
CV19	24794101	EL, 100 μ F, 16V
CV20	24636100	EL, 10 μ F, 50V

Location No.	Part No.	Description
CX02	24538104	PF, 0.1 μ F
CX03	24538104	PF, 0.1 μ F
CX04	24538104	PF, 0.1 μ F
RESISTORS		
R161	24366131	CF, 130 ohm
R201	24366181	CF, 180 ohm
R202	24366271	CF, 270 ohm
R203	24366221	CF, 220 ohm
R204	24366151	CF, 150 ohm
R205	24366152	CF, 1500 ohm
R209	24366104	CF, 100k ohm
R210	24366154	CF, 150k ohm
R211	24366393	CF, 39k ohm
R212	24366333	CF, 33k ohm
R213	24366821	CF, 820 ohm
R214	24366152	CF, 1500 ohm
R215	24366102	CF, 1k ohm
R216	24366563	CF, 56k ohm
R217	24366393	CF, 39k ohm
R218	24366472	CF, 4700 ohm
R219	24366103	CF, 10k ohm
R220	24366331	CF, 330 ohm
R222	24366101	CF, 100 ohm
R223	24552331	OMF, 330 ohm, 1/2W
R225	24366272	CF, 2700 ohm
R226	24366182	CF, 1800 ohm
R227	24366272	CF, 2700 ohm
R234	24366393	CF, 39k ohm
R235	24366392	CF, 3900 ohm
R236	24366472	CF, 4700 ohm
R240	24366683	CF, 68k ohm
R241	24366753	CF, 75k ohm
R245	24366102	CF, 1k ohm
R255	24061588	VR, 20k ohm, 1/8W
R256	23145281	SW/VR Block, 4P
R257	23145281	SW/VR Block, 4P
R301	24366391	CF, 390 ohm
R302	24366244	CF, 240k ohm
R303	24366273	CF, 27k ohm
R304	24366102	CF, 1k ohm
R305	24366161	CF, 160 ohm
R306	24366472	CF, 4700 ohm
R307	24366103	CF, 10k ohm
R311	24376391	CF, 390 ohm, 1/2W
R312	24366223	CF, 22k ohm
R313	24366274	CF, 270k ohm
R317	24381100	OMF, 10 ohm, 1/2W
R320	24366102	CF, 1k ohm
R321	24366123	CF, 12k ohm
R323	24322229	OMF, 2.2 ohm, 1W
R325	24366203	CF, 20k ohm
R327	24376122	CF, 1200 ohm, 1/2W
R351	24061587	VR, 50k ohm, 1/8W
R361	24383271	OMF, 270 ohm, 2W
R402	24366273	CF, 27k ohm
R403	24366302	CF, 3k ohm
R405	24366511	CF, 510 ohm
R407	24366510	CF, 51 ohm
R408	24366202	CF, 2k ohm
R410	24376432	CF, 4300 ohm, 1/2W
R411	24366431	CF, 430 ohm
R412	24381102	OMF, 1k ohm, 1/2W
R413	24366103	CF, 10k ohm

Location No.	Part No.	Description
R414	24366910	CF, 91 ohm
R416	24384242	OMF, 2400 ohm, 3W
R417	24553331	OMF, 330 ohm, 1W
R440	24366103	CF, 10k ohm
R441	24366103	CF, 10k ohm
R444	24322109	OMF, 1 ohm, 1W
R445	24553472	OMF, 4700 ohm, 1W
R448	24547339	FR, 3.3 ohm, 1W
R501	24366101	CF, 100 ohm
R502	24366334	CF, 330k ohm
R503	24366202	CF, 2k ohm
R504	24366471	CF, 470 ohm
R505	24366822	CF, 8200 ohm
R506	24366561	CF, 560 ohm
R507	24366822	CF, 8200 ohm
R508	24366561	CF, 560 ohm
R509	24366823	CF, 82k ohm
R511	24366153	CF, 15k ohm
R512	24366152	CF, 1500 ohm
R513	24366152	CF, 1500 ohm
R514	24366473	CF, 47k ohm
R515	24366221	CF, 220 ohm
R516	24366221	CF, 220 ohm
R517	24366221	CF, 220 ohm
R519	24366683	CF, 68k ohm
R521	24366102	CF, 1k ohm
R522	24945475	CC, 4.7M ohm, $\pm 10\%$, 1/4W
R526	24945185	CC, 1.8M ohm, $\pm 10\%$, 1/4W
R527	24945475	CC, 4.7M ohm, $\pm 10\%$, 1/4W
R529	24366561	CF, 560 ohm
R534	24366751	CF, 750 ohm
R536	24366201	CF, 200 ohm
R537	24366681	CF, 680 ohm
R538	24366241	CF, 240 ohm
R539	24366681	CF, 680 ohm
R541	24366221	CF, 220 ohm
R542	24366221	CF, 220 ohm
R543	24366221	CF, 220 ohm
R544	24366821	CF, 820 ohm
R545	24366821	CF, 820 ohm
R546	24366821	CF, 820 ohm
R547	24366101	CF, 100 ohm
R551	24066955	VR, 1k ohm, 1/10W
R555	23145281	SW/VR Block, 4P
R556	23145281	SW/VR Block, 4P
R557	24061589	VR, 10k ohm, 1/8W
R558	24061589	VR, 10k ohm, 1/8W
R559	24061589	VR, 10k ohm, 1/8W
R560	24366332	CF, 3300 ohm
R561	24366682	CF, 6800 ohm
R562	24366333	CF, 33k ohm
R563	24366471	CF, 470 ohm
R564	24376471	CF, 470 ohm, 1/2W
R565	24366333	CF, 33k ohm
R591	24383153	OMF, 15k ohm, 2W
R592	24383153	OMF, 15k ohm, 2W
R593	24383153	OMF, 15k ohm, 2W
R601	24366821	CF, 820 ohm
R611	24322398	OMF, 0.39 ohm, 1W
R612	24321479	OMF, 4.7 ohm, 1/2W
R614	24366103	CF, 10k ohm
R615	24366472	CF, 4700 ohm
R616	24366332	CF, 3300 ohm
R617	24366682	CF, 6800 ohm

Location No.	Part No.	Description
R618	24366334	CF, 330k ohm
R622	24366102	CF, 1k ohm
R623	24366564	CF, 560k ohm
R624	24366102	CF, 1k ohm
R625	24366101	CF, 100 ohm
R626	24366332	CF, 3300 ohm
R627	24366223	CF, 22k ohm
R628	24366473	CF, 47k ohm
R671	24366272	CF, 2700 ohm
R672	24366152	CF, 1500 ohm
R673	24366152	CF, 1500 ohm
R674	24366821	CF, 820 ohm
R675	24366122	CF, 1200 ohm
R676	24366105	CF, 1M ohm
R678	24366152	CF, 1500 ohm
R688	24366221	CF, 220 ohm
R689	24366102	CF, 1k ohm
R690	24366102	CF, 1k ohm
R691	24366223	CF, 22k ohm
R692	24552680	OMF, 68 ohm, 1/2W
R693	24366103	CF, 10k ohm
R694	24366681	CF, 680 ohm
△ R801	24007885	Cement, 2.2 ohm, 10W
R810	24377224	CF, 220k ohm, 1W
R811	24377224	CF, 220k ohm, 1W
R812	24366333	CF, 33k ohm
R813	24376563	CF, 56k ohm, 1/2W
R814	24366222	CF, 2200 ohm
R816	24366103	CF, 10k ohm
R817	24366222	CF, 2200 ohm
R818	24366823	CF, 82k ohm
R820	24366331	CF, 330 ohm
R821	24366103	CF, 10k ohm
R822	24366561	CF, 560 ohm
R823	24553391	OMF, 390 ohm, 1W
R824	24383100	OMF, 10 ohm, 2W
R825	24323338	OMF, 0.33 ohm, 2W
R826	24982398	OMF, 0.039 ohm, 1/2W
R832	24007538	Cement, 1k ohm, 7W
R835	24553153	OMF, 15k ohm, 1W
R836	24366222	CF, 2200 ohm
R837	24366823	CF, 82k ohm
R838	24366101	CF, 100 ohm
R839	24366682	CF, 6800 ohm
R841	24381100	OMF, 10 ohm, 1/2W
R842	24552910	OMF, 91 ohm, 1/2W
R890	24000875	PTC Thermistor, 18 ohm, ±20%, 290V
R901	24946272	CC, 2700 ohm, ±10%, 1/2W
R902	24946272	CC, 2700 ohm, ±10%, 1/2W
R903	24946272	CC, 2700 ohm, ±10%, 1/2W
R920	24000892	FR, 1.2 ohm, 1W
RA01	24552680	OMF, 68 ohm, 1/2W
RA02	24366682	CF, 6800 ohm
RA03	24366332	CF, 3300 ohm
RA04	24366271	CF, 270 ohm
RA05	24366102	CF, 1k ohm
RA08	24366102	CF, 1k ohm
RA09	24945565	CC, 5.6M ohm, ±10%, 1/4W
RA10	24945565	CC, 5.6M ohm, ±10%, 1/4W
RA11	24945565	CC, 5.6M ohm, ±10%, 1/4W
RA12	24945565	CC, 5.6M ohm, ±10%, 1/4W
RA17	24366512	CF, 5100 ohm
RA18	24366102	CF, 1k ohm

Location No.	Part No.	Description
RA19	24366622	CF, 6200 ohm
RA20	24366101	CF, 100 ohm
RA21	24366124	CF, 120k ohm
RA22	24366473	CF, 47k ohm
RA23	24366473	CF, 47k ohm
RA24	24366622	CF, 6200 ohm
RA26	24366472	CF, 4700 ohm
RA28	24366103	CF, 10k ohm
RA29	24366434	CF, 430k ohm
RA31	24366223	CF, 22k ohm
RA32	24366102	CF, 1k ohm
RA33	24366272	CF, 2700 ohm
RA35	24366101	CF, 100 ohm
RA36	24366473	CF, 47k ohm
RA37	24366102	CF, 1k ohm
RA43	24366223	CF, 22k ohm
RA44	24366103	CF, 10k ohm
RA46	24366103	CF, 10k ohm
RA51	24366103	CF, 10k ohm
RA54	24366102	CF, 1k ohm
RA55	24366223	CF, 22k ohm
RA56	24366333	CF, 33k ohm
RA57	24366333	CF, 33k ohm
RA58	24366333	CF, 33k ohm
RA59	24366333	CF, 33k ohm
RA60	24366153	CF, 15k ohm
RA61	24366273	CF, 27k ohm
RA69	24366272	CF, 2700 ohm
RA70	24366102	CF, 1k ohm
RA76	24366153	CF, 15k ohm
RA80	24366363	CF, 36k ohm
RA84	24366473	CF, 47k ohm
RA85	24366333	CF, 33k ohm
RA86	24366563	CF, 56k ohm
RA89	24366333	CF, 33k ohm
RA96	24366363	CF, 36k ohm
RB01	24366333	CF, 33k ohm
RB02	24366302	CF, 3k ohm
RB03	24366103	CF, 10k ohm
RB04	24366103	CF, 10k ohm
RB05	24366332	CF, 3300 ohm
RB06	24366473	CF, 47k ohm
RM03	24366272	CF, 2700 ohm
RM04	24366432	CF, 4300 ohm
RM05	24366221	CF, 220 ohm
RN01	24366223	CF, 22k ohm
RN02	24366331	CF, 330 ohm
RN03	24366220	CF, 22 ohm
RN04	24366103	CF, 10k ohm
RN05	24366224	CF, 220k ohm
RN06	24366471	CF, 470 ohm
RN07	24366392	CF, 3900 ohm
RN08	24366562	CF, 5600 ohm
RN09	24360514	CF, 510k ohm, 1/8W
RN10	24366332	CF, 3300 ohm
RN15	24366100	CF, 10 ohm
RN16	24366333	CF, 33k ohm
RN17	24366103	CF, 10k ohm
RN26	24366821	CF, 820 ohm
RN27	24366103	CF, 10k ohm
RN28	24366103	CF, 10k ohm
RN29	24366222	CF, 2200 ohm
RN30	24366331	CF, 330 ohm
RN31	24366101	CF, 100 ohm

Location No.	Part No.	Description
RN32	24366333	CF, 33k ohm
RN33	24366222	CF, 2200 ohm
RN35	24366222	CF, 2200 ohm
RN36	24366103	CF, 10k ohm
RN37	24366103	CF, 10k ohm
RN42	24366272	CF, 2700 ohm
RN43	24366103	CF, 10k ohm
RN44	24366103	CF, 10k ohm
RN45	24366223	CF, 22k ohm
RN47	24366221	CF, 220 ohm
RR01	24366102	CF, 1k ohm
RR05	24376470	CF, 47 ohm, 1/2W
RR06	24366471	CF, 470 ohm
RS13	24366104	CF, 100k ohm
RS14	24366473	CF, 47k ohm
RS15	24366102	CF, 1k ohm
RS16	24366102	CF, 1k ohm
RS17	24366102	CF, 1k ohm
RS18	24366102	CF, 1k ohm
RS19	24366102	CF, 1k ohm
RS20	24366102	CF, 1k ohm
RS21	24366102	CF, 1k ohm
RS22	24366102	CF, 1k ohm
RS23	24366103	CF, 10k ohm
RS24	24366203	CF, 20k ohm
RS25	24366203	CF, 20k ohm
RS26	24366203	CF, 20k ohm
RV01	24366103	CF, 10k ohm
RV02	24366103	CF, 10k ohm
RV03	24366104	CF, 100k ohm
RV04	24366563	CF, 56k ohm
RV05	24366331	CF, 330 ohm
RV06	24366104	CF, 100k ohm
RV07	24366102	CF, 1k ohm
RV08	24366102	CF, 1k ohm
RV10	24366122	CF, 1200 ohm
RV11	24002993	CC, 4.7M ohm, $\pm 10\%$
RV12	24002993	CC, 4.7M ohm, $\pm 10\%$
RV13	24366331	CF, 330 ohm
RV14	24366822	CF, 8200 ohm
RV15	24366472	CF, 4700 ohm
RV16	24366750	CF, 75 ohm
RV17	24552131	OMF, 130 ohm, 1/2W
RV25	24366102	CF, 1k ohm
RV26	24366122	CF, 1200 ohm
RV27	24366272	CF, 2700 ohm
RV28	24366332	CF, 3300 ohm
RV29	24366103	CF, 10k ohm
RV30	24366331	CF, 330 ohm
RV55	24066954	VR, 2k ohm, 1/10W
RX03	24366103	CF, 10k ohm
RX08	24366242	CF, 2400 ohm
RX09	24366391	CF, 390 ohm
RX13	24366102	CF, 1k ohm
RX16	24366183	CF, 18k ohm
COILS & TRANSFORMERS		
L161	23201003	Coil, Choke, TRF9202A
L201	23238923	Coil, Peaking, TRF4829AC
L202	23237993	Coil, Peaking, TRF4339AC
L203	23237981	Coil, Peaking, TRF4330AC
L204	23237980	Coil, Peaking, TRF4390AC
L301	23237984	Coil, Peaking, TRF4180AC
L311	23261974	Coil (Ferrite Bead), HC5-035

Location No.	Part No.	Description
L406	23103859	Coil (Ferrite Bead), TEM2011
L407	23103859	Coil (Ferrite Bead), TEM2011
L410	23221026	Coil, Choke, AZ9004Y
L411	23233065	Coil, Linearity, TLN2111
△ L462	23227527	Deflection Yoke, TDY6195A
L502	23238920	Coil, Peaking, TRF4150AC
L503	23238922	Coil, Peaking, TRF4100AC
L551	23250972	Coil, 1H-Delay Matching, TRF5418D
L601	23238918	Coil, Peaking, TRF4220AC
L631	23237977	Coil, Peaking, TRF4680AC
L651	23232946	Coil, Variable, TRF3073D
L671	23262739	Coil, IF Coil, TRF1126
L672	23262739	Coil, IF Coil, TRF1126
L811	23261975	Coil, Choke, TRF9229
L812	23221060	Coil, Choke, TLN1015E
L813	23222694	Coil, Width, TLN2026
L814	23103859	Coil (Ferrite Bead), TEM2011
L815	23103859	Coil (Ferrite Bead), TEM2011
L816	23103859	Coil (Ferrite Bead), TEM2011
L817	23221060	Coil, Choke, TLN1015E
L820	23261975	Coil, Choke, TRF9229
△ L901	23200672	Coil, Degaussing, TSB2284
LA01	23237999	Coil, Peaking, TRF4109AC
LA02	23103859	Coil (Ferrite Bead), TEM2011
LA03	23221937	Coil, Choke, TLN3040
LB01	23262730	Coil, IF Coil, TRF1120
LM01	23262797	Coil, IF Coil, TRF1093D
LM02	23272988	Coil, Chroma Demod, TRF5414
LM03	23272988	Coil, Chroma Demod, TRF5414
LM04	23262798	Coil, IF Coil, TRF1092D
LN03	23238918	Coil, Peaking, TRF4220AC
LN21	23238920	Coil, Peaking, TRF4150AC
LN24	23238921	Coil, Peaking, TRF4120AC
△ T401	23224983	Transformer, Horiz. Drive, TLN1039
△ T461	23236003	Transformer, Flyback, TFB4039AD
△ T801	23211928	Line Filter, TRF3129
T802	23213495	Transformer, Converter, TPW3142A
T803	23224929	Transformer, Power. Drive, TLN2106
T804	23224914	Transformer, Separation, TLN2106
TN01	23262895	Coil, PIF Trap, TRF1441
TV01	23210967	Transformer, Separation, TSP2015
SEMICONDUCTORS		
IC303	23119548	IC, AN5515
IC501	B0379470	IC, TA8659N
IC601	23318388	IC, TDA1010A
IC621	23318015	IC, AN5222
IC805	23318299	IC, L78MR05-FA
ICA01	23318376	IC, M34300N581SP
ICS01	B0379150	IC, TA8615N
ICV01	B0325390	IC, TA7347P
ICV02	B0325390	IC, TA7347P
Q201	A6317440	Transistor, 2SC1815-Y
Q204	A6509140	Transistor, 2SA562TMY
Q205	A6317440	Transistor, 2SC1815-Y

Location No.	Part No.	Description
Q303B	23035308	Screw, BTB3X8SZN
Q402	A6330069	Transistor, 2SC2482 FA-1
△ Q404	A6868706	Transistor, 2SD1427 FA-1
Q502	A6317440	Transistor, 2SC1815-Y
Q505	A6363200	Transistor, 2SC3619
Q507	A6363200	Transistor, 2SC3619
Q509	A6363200	Transistor, 2SC3619
Q510	A6330059	Transistor, 2SC2482
Q622	A6317440	Transistor, 2SC1815-Y
Q671	A6317440	Transistor, 2SC1815-Y
Q672	A6534040	Transistor, 2SA1015-Y
Q801	23314503	Transistor, (STR), D4512L904
Q802	A6360200	Transistor, 2SC3333
Q803	A6328328	Transistor, 2SC2383-O
Q804	A6330438	Transistor, 2SC2500-C
Q806	A6360200	Transistor, 2SC3333
Q807	A6317440	Transistor, 2SC1815-Y
QA02	A6708871	Transistor, 2SC388ATM
QA05	A6317440	Transistor, 2SC1815-Y
QA13	A6317440	Transistor, 2SC1815-Y
QA14	A6317440	Transistor, 2SC1815-Y
QA17	A6317440	Transistor, 2SC1815-Y
QA18	A6534040	Transistor, 2SA1015-Y
QA19	A6534040	Transistor, 2SA1015-Y
QA20	A6317440	Transistor, 2SC1815-Y
QA21	A6317440	Transistor, 2SC1815-Y
QA22	A6534040	Transistor, 2SA1015-Y
QA24	23114455	Transistor, DTC124E-S
QA25	A6534040	Transistor, 2SA1015-Y
QB01	A6317440	Transistor, 2SC1815-Y
QB02	A6317440	Transistor, 2SC1815-Y
QN01	A6317440	Transistor, 2SC1815-Y
QN02	A6534040	Transistor, 2SA1015-Y
QN03	A6534040	Transistor, 2SA1015-Y
QN04	A6534040	Transistor, 2SA1015-Y
QN06	A6317440	Transistor, 2SC1815-Y
QN07	A6317440	Transistor, 2SC1815-Y
QN12	A6317440	Transistor, 2SC1815-Y
QN13	A6317440	Transistor, 2SC1815-Y
QN14	A6002040	Transistor, RN1204
QS02	A6317440	Transistor, 2SC1815-Y
QV03	A6317440	Transistor, 2SC1815-Y
QV04	A6317440	Transistor, 2SC1815-Y
QV05	A6534040	Transistor, 2SA1015-Y
QV08	A6534040	Transistor, 2SA1015-Y
QV09	A6317440	Transistor, 2SC1815-Y
D240	A7150258	Diode, 1SS176
D241	A7150041	Diode, 1SS104
D242	A7150351	Diode, 1SS178
D302	A7117215	Diode, Zener, 04AZ12Y
D303	23115532	Diode, ERB12-01RK
D309	A7568300	Diode, 1S1835
D315	A7272143	Diode, Zener, 1Z75
D316	A7116725	Diode, Zener, 04AZ7.5Z
D320	A7150258	Diode, 1SS176
D405	A7117025	Diode, Zener, 04AZ10Z
D406	A7978850	Diode, S5295G
D408	A7568300	Diode, 1S1835
D409	A7117015	Diode, Zener, 04AZ10Y
D410	A7116815	Diode, Zener, 04AZ8.2Y
D501	A7150258	Diode, 1SS176
D503	A7116315	Diode, Zener, 04AZ5.1Y
D591	A7275400	Diode, 1S2462
D592	A7275400	Diode, 1S2462

Location No.	Part No.	Description
D593	A7275400	Diode, 1S2462
D594	A7150258	Diode, 1SS176
D801	23118173	Diode, RBV-406M-LFA
D806	23316252	Diode, RG4A
D813	A7568300	Diode, 1S1835
D814	A7580656	Diode, 3JH61 (FA2)
D815	23316242	Diode, ON311-R, TH
D820	A7978855	Diode, S5295J
D821	A7117015	Diode, Zener, 04AZ10Y
D822	A7117215	Diode, Zener, 04AZ12Y
D823	A7150258	Diode, 1SS176
D824	A7150258	Diode, 1SS176
D825	A7978850	Diode, S5295G
D826	A7116925	Diode, Zener, 04AZ9.1Z
D828	A7150258	Diode, 1SS176
D829	A7150258	Diode, 1SS176
DA07	A7150258	Diode, 1SS176
DA08	A7150258	Diode, 1SS176
DA13	A7150258	Diode, 1SS176
DA14	A7116315	Diode, Zener, 04AZ5.1Y
DA16	A7150258	Diode, 1SS176
DA17	A7150258	Diode, 1SS176
DA19	A7150258	Diode, 1SS176
DA20	A7288601	Diode, 1S2186 FA-1
DA21	A7150258	Diode, 1SS176
DA22	A7150258	Diode, 1SS176
DA26	A7150258	Diode, 1SS176
DA27	A7150258	Diode, 1SS176
DA28	A7150258	Diode, 1SS176
DA30	23115878	Diode, Zener, μ PC574JC
DA31	A7150258	Diode, 1SS176
DA35	A7150258	Diode, 1SS176
DE40	A8636540	Diode, (Led), TLS153, Red
DN04	A7288601	Diode, 1S2186 FA-1
DN05	A7288601	Diode, 1S2186 FA-1
DN06	A7288601	Diode, 1S2186 FA-1
DN07	A7288601	Diode, 1S2186 FA-1
DN10	A7288601	Diode, 1S2186 FA-1
DN15	A7288601	Diode, 1S2186 FA-1
DN16	A7150258	Diode, 1SS176
DS05	A7150258	Diode, 1SS176
DS06	A7150258	Diode, 1SS176
DS07	A7150258	Diode, 1SS176
DS08	A7150258	Diode, 1SS176
DV01	A8641942	Photo Coupler, TLP631-GB
MISCELLANEOUS		
△ F801	23144959	Fuse, 3.15A
F801A	23165102	Fuse Holder
K901	23120672	Remote Sensor, HC-TB06
P001	23142465	Aerial Terminal Board, AT940
△ P801	23176712	Power Cord
PV01	23363872	Pin Jack, Yellow
PV02	23363873	Pin Jack, White
S201	23145682	Switch, Lever, 1C3P
△ S801	23145434	Switch, Power, 2C2P
SA01	23145430	Switch, Push, 1C1P
SA02	23145430	Switch, Push, 1C1P
SA03	23145430	Switch, Push, 1C1P
SA04	23145430	Switch, Push, 1C1P
SA05	23145430	Switch, Push, 1C1P
SA06	23145281	SW/VR Block, 4P

Location No.	Part No.	Description
SA07	23145281	SW/VR Block, 4P
SA08	23145281	SW/VR Block, 4P
SA09	23145579	Switch, Push, 2C2P
SA09A	23443133	Knob, System
SA10	23145281	SW/VR Block, 4P
△ V901A	23901867	Socket, CRT, 8P
V901M	23102970	Magnet, Purity-Convergence, MAG1015
W201	23250877	Coil, Delay, TRF2082
W661	23151305	Speaker, SPK1207, 60x70mm, 8 ohm
W662	23151305	Speaker, SPK1207, 60x70mm, 8 ohm
X401	23153886	Ceramic Resonator, 503kHz, TCR1012
X501	23153979	Crystal, 4.43MHz
X502	23153797	1H-Delay Line, PAL, ED645A41T
XN01	23153961	Crystal, 3.58MHz
Z201	23107911	Ceramic Video Trap, 5.5 to 6MHz, TCF1019
Z202	23107658	Ceramic Video Trap, 5.74MHz, 5.74MHz, TCF1052
Z601	23107980	Ceramic Filter, 4.5MHz, SFE4.5MB
Z671	23107947	Ceramic Filter, 5.5MHz, SFE5.5MBF
Z672	23107948	Ceramic Filter, 6.0MHz, SFE6.0MBF
Z673	23107949	Ceramic Filter, 6.5MHz, SFE6.5MBF
Z674	23153900	Ceramic Resonator, 500kHz, TCR1010
Z675	23107948	Ceramic Filter, 6.0MHz, SFE6.0MBF
ZA01	23153741	Ceramic Resonator, 4MHz, TCRR1029
ZA02	24094651	Capacitor Block, 100pFx4, 50V
ZA03	24094645	Capacitor Block, 0.01μFx4, 50V
ZN01	23107913	Ceramic Video Trap, 6.5MHz, TCF1018
ZN02	23107976	Ceramic Video Trap, 4.5MHz, TPS4.5MC2
ZN03	23107787	Ceramic Video Trap, 3.58MHz, TCF1044
ZN04	23107849	Ceramic Video Trap, 4.43MHz, TCF1032
PC BOARD ASSEMBLIES		
U902A	23334287	Main Board, PW6863-1
U902B	23334288	CRT Drive Board, PW6863-2
U903A	23334109	SYS. Switch Board, PW6756-1
U903B	23334110	A/V Switch Board, PW6756-2

Location No.	Part No.	Description
PICTURE TUBE		
△ V901	A5530239	Picture Tube, A46JAR96X01P, SVC
TUNER		
H001	23121611	Tuner, VHF/UHF, EG618V
REMOTE HAND SET PARTS		
K902	23120518	Remote Hand Unit, CT9288
AT01	23300926	Upper Case
AT02	23300919	Lower Case
AT03	23300920	Battery Cover
AT04	23330921	Filter
ST01	23300927	Rubber
UT01	23334586	Remote Hand Unit Board, PW6916
ZT01	23153736	Ceramic Resonator, TCR1025

SCHEMATIC DIAGRAM MODEL 198X8M

NOTE: The parts identified by the international hazard symbols are critical for safety. Replace only with part number specified.

OBSERVATION OF VOLTAGES AND WAVEFORMS

- 1. Voltages read with VTVM from point shown to chassis ground, line voltage 220 volts, colour bar signal.
- 2. Voltages reading may vary $\pm 20\%$.
- 3. The schematic shown is representative only.
- 4. All waveforms are taken using a wide band oscilloscope and a low capacity probe
- 5. Check FINE TUNING, BRIGHTNESS, CONTRAST and COLOUR controls for best picture, make sure that CONTRAST and COLOUR controls are in mid position and BRIGHTNESS control is almost in maximum position.
- 6. Waveforms are taken using a standard colour bar signal.

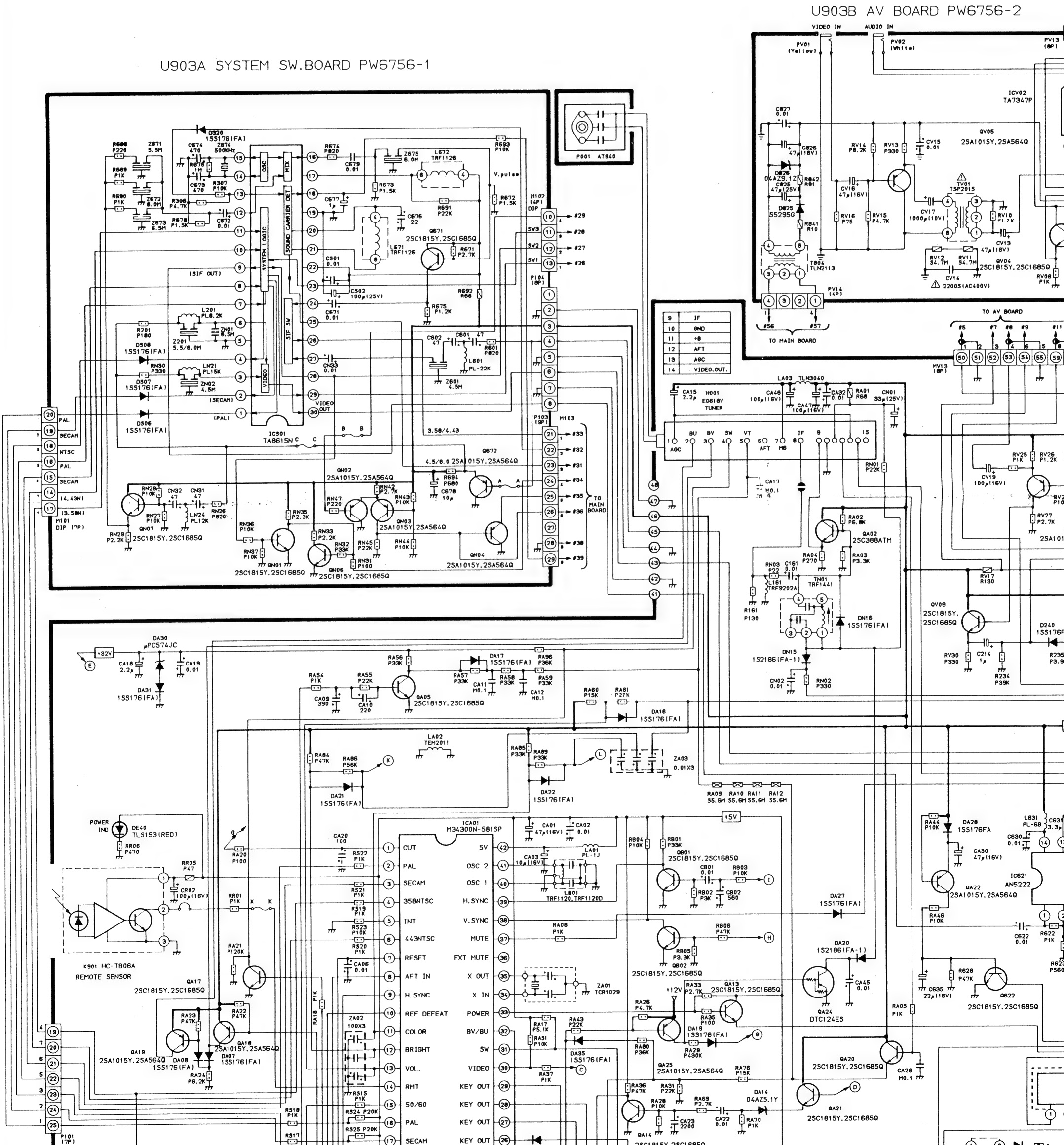
NOTES:

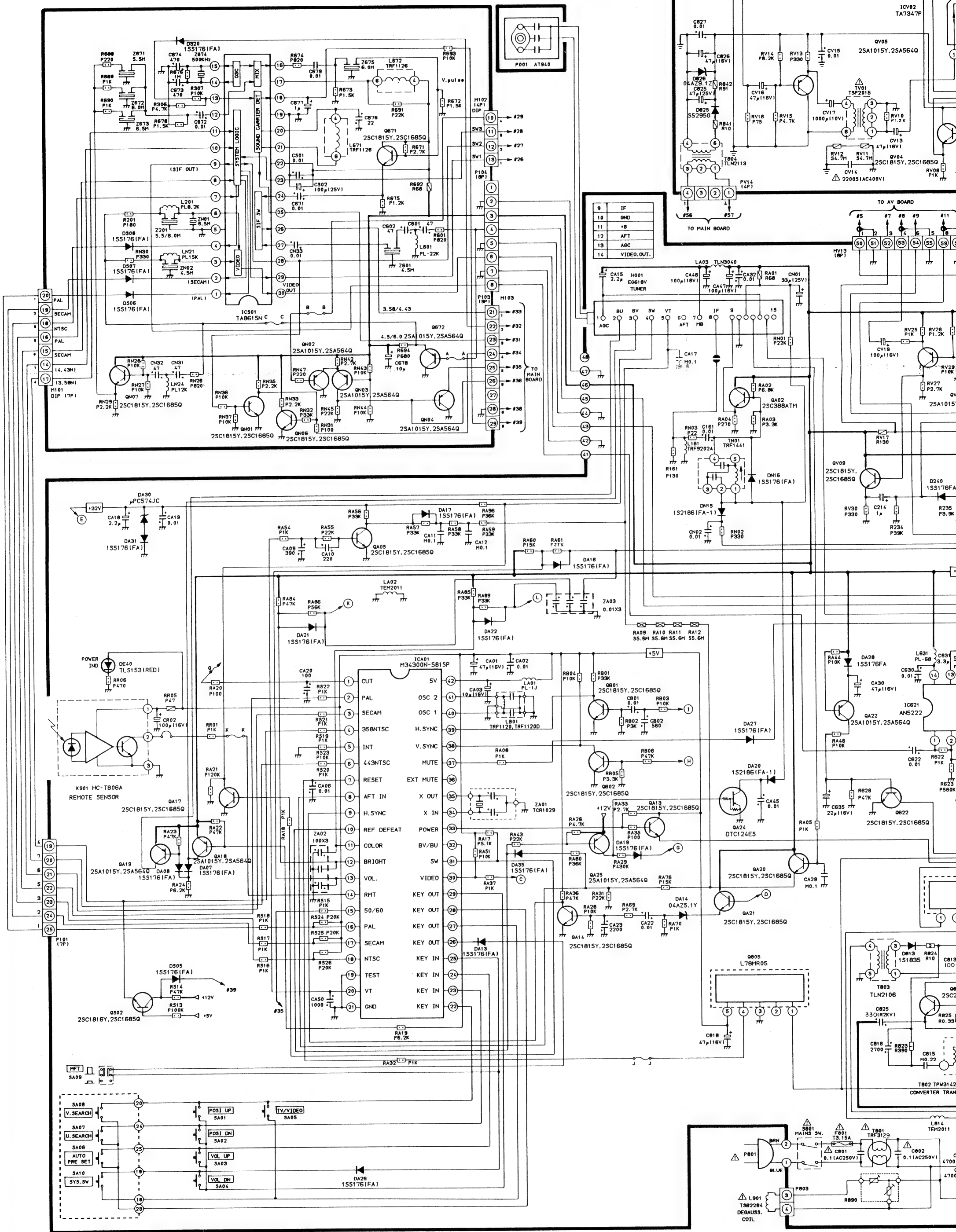
- 1. D.C. resistance value of a principal transformer is shown in this schematic diagram. These are measured for separated from the circuit.
- 2. The circuits are subject to change without notice.
- 3. \bullet : Solder links.

EXPRESSION

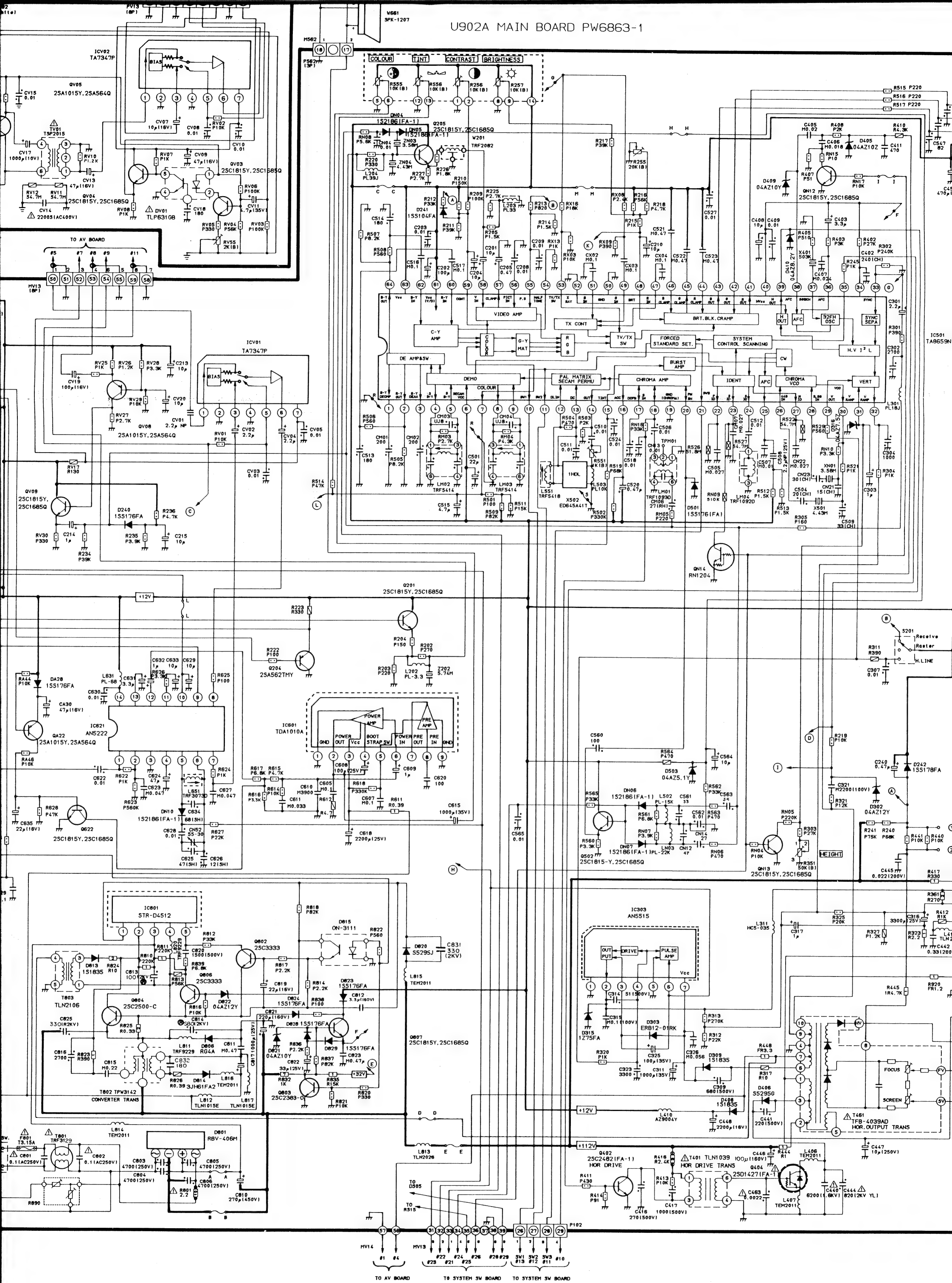
VALUE OF RESISTOR, CAPACITOR and INDUCTOR

- 1. Resistance is shown in ohm, k=1,000, M=1,000,000
- 2. Unless other wise noted in schematic, all capacitor values less than 1 are expressed in μF and the values more than 1 in pF.
- 3. Unless otherwise noted in schematic, all inductor values more than 1 are expressed in μH , and the values less than 1 in H.





U902A MAIN BOARD PW6863-1



chematic dia-

1 are expres-

1 are expres-




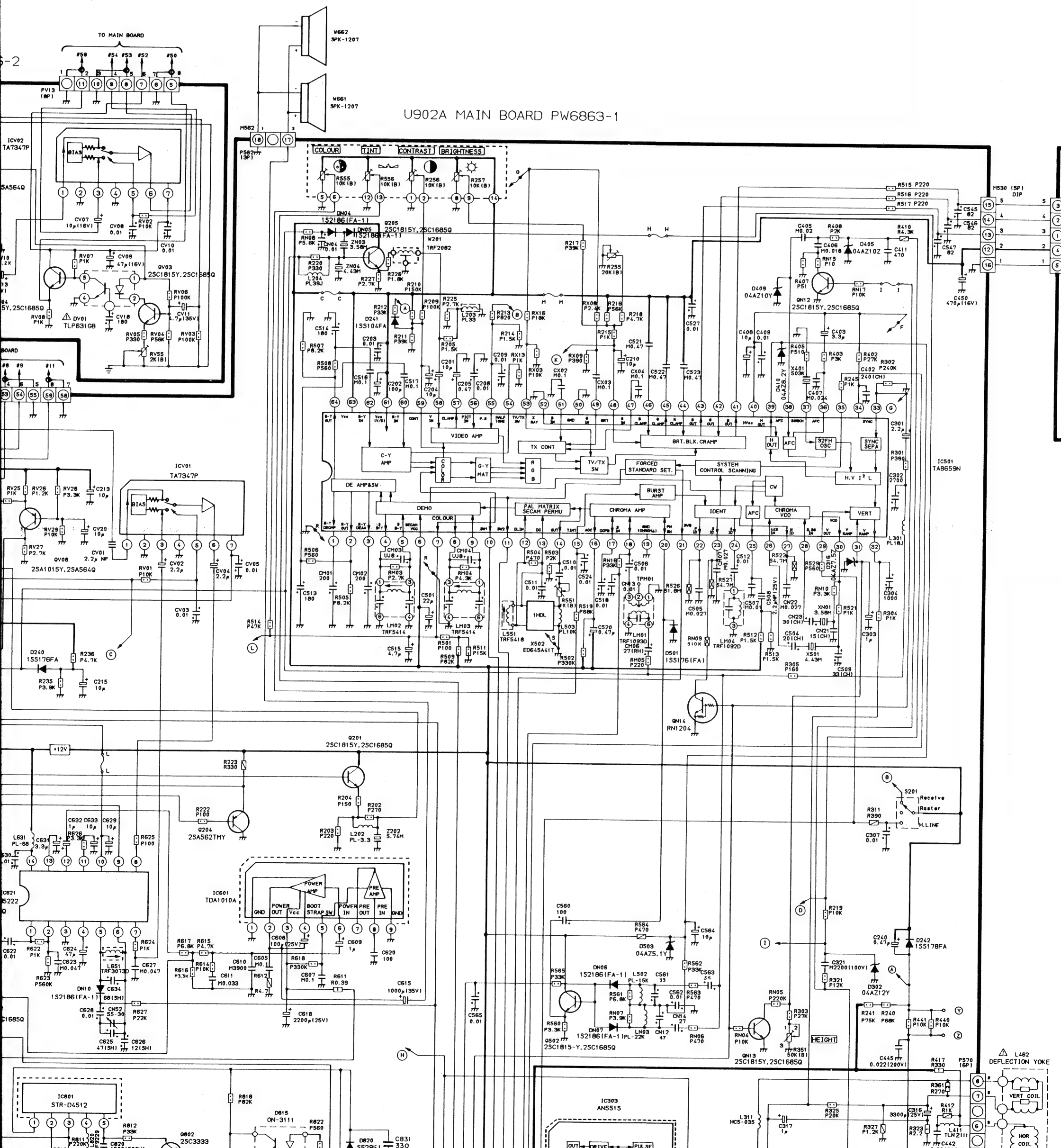
Type	Mark
Carbon Composition	S
Oxide Metal Film	R
Insulated Carbon Film	P
Wire Wound	W
Cement	No Mark
Variable Resistor	
Positive Thermistor	
Negative Thermistor	
Fusible Resistor	FR

Table 3

Watt	Mark	Watt	Mark
1/6 W		3 W	
1/8 W		5 W	
1/4 W		10 W	
1/2 W		15 W	
1 W		20 W	
2 W		25 W	

Type	Mark
Ceramic Disc 50V Only	
Electrolytic	
Electrolytic Non-Polar	
Variable Capacitor	
Other	



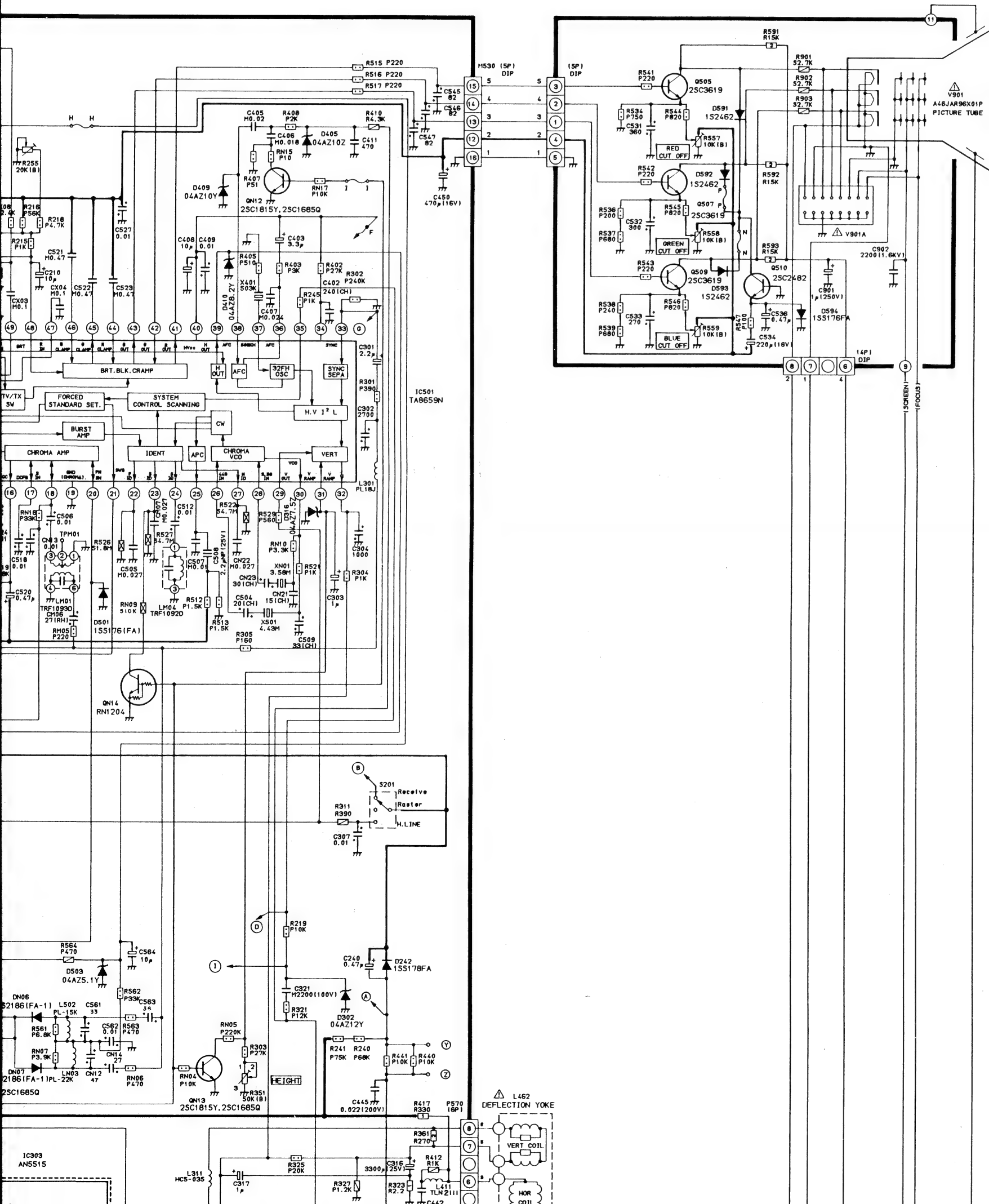
Type	Mark
Ceramic Disc 50V Only	
Electrolitic	
Electrolitic Non-Polar	
Variable Capacitor	
Other	

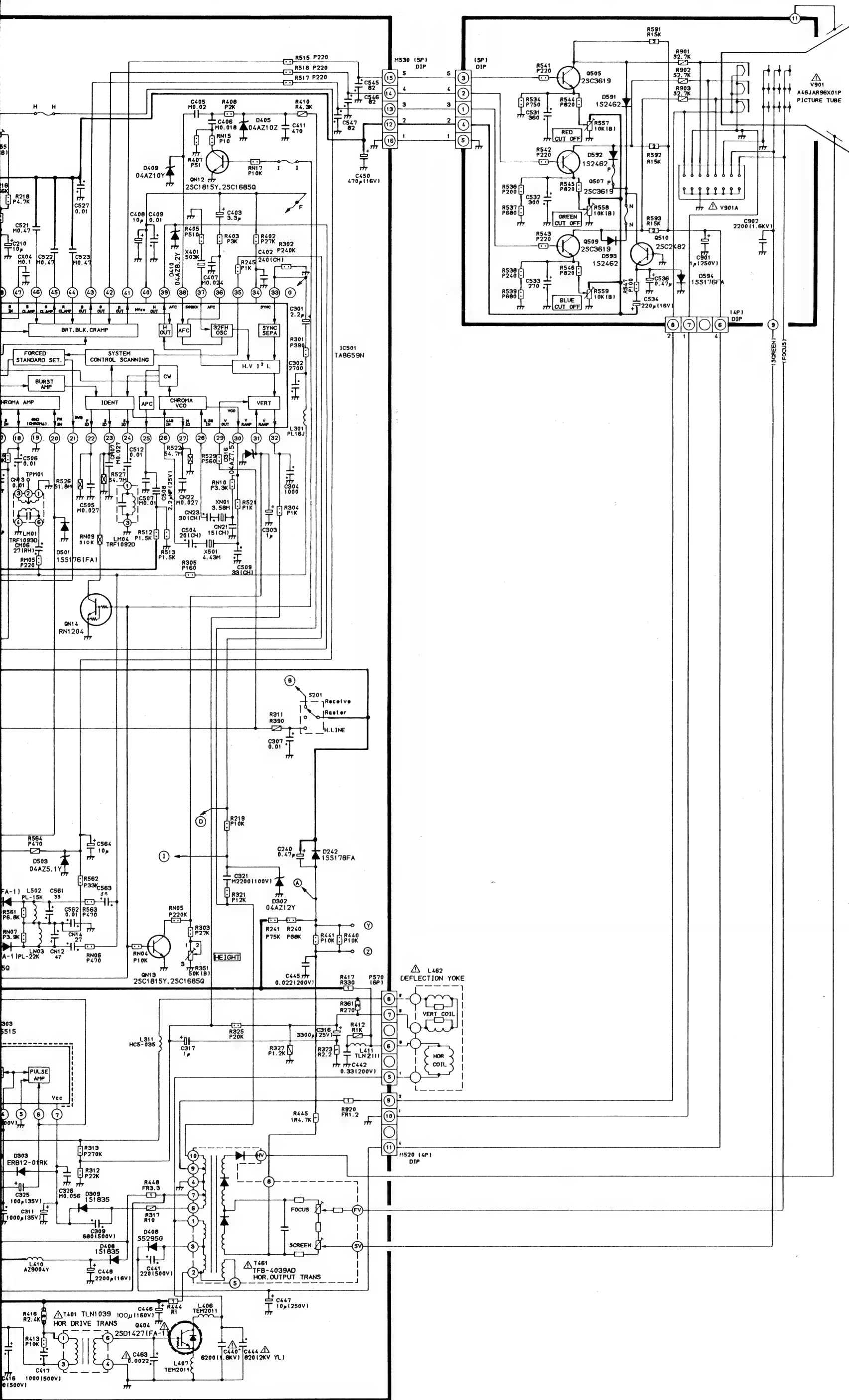
Type	Mark
Ceramic Disc 50V Only	
Electrolitic	
Electrolitic Non-Polar	
Variable Capacitor	
Other	

Type	Mark
Ceramic Disc 50V Only	
Electrolitic	
Electrolitic Non-Polar	
Variable Capacitor	
Other	

63-1

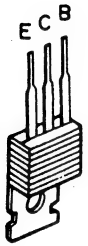
U902B CRT DRIVE BOARD PW6863-2





TERMINAL VIEW OF TRANSISTOR

① 2SA940
2SC2073



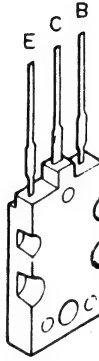
② 2SC2229
2SC2482
2SC2230GR
2SC2655
2SC2120
2SA1020



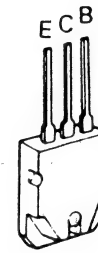
③ 2SA1015
2SC1815
2SA562TM
2SC388ATM



④ 2SD1427



⑤ 2SC3182N



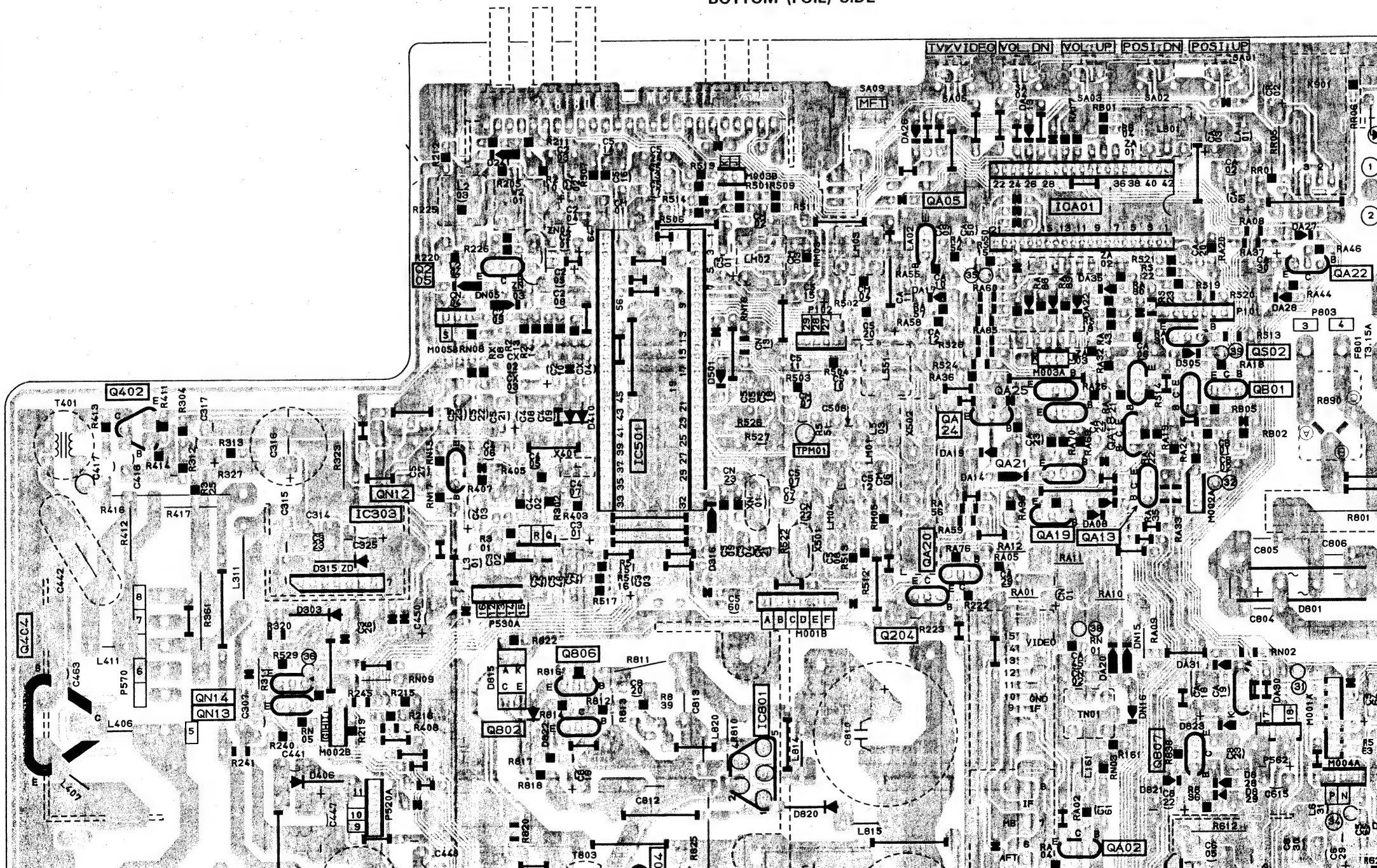
⑥ RN1203
RN1204

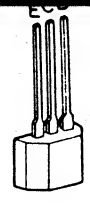


⑦ DTC124ES

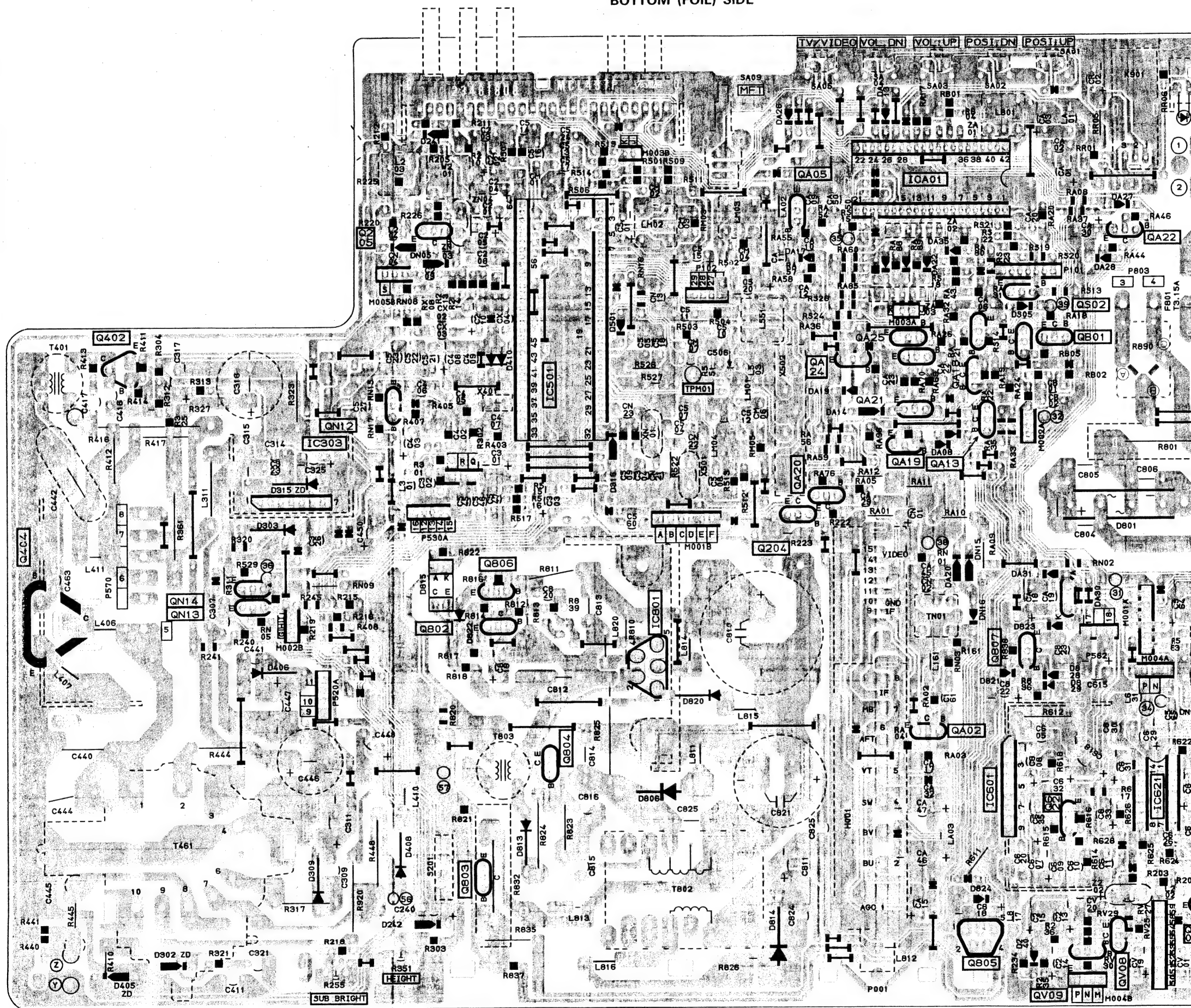


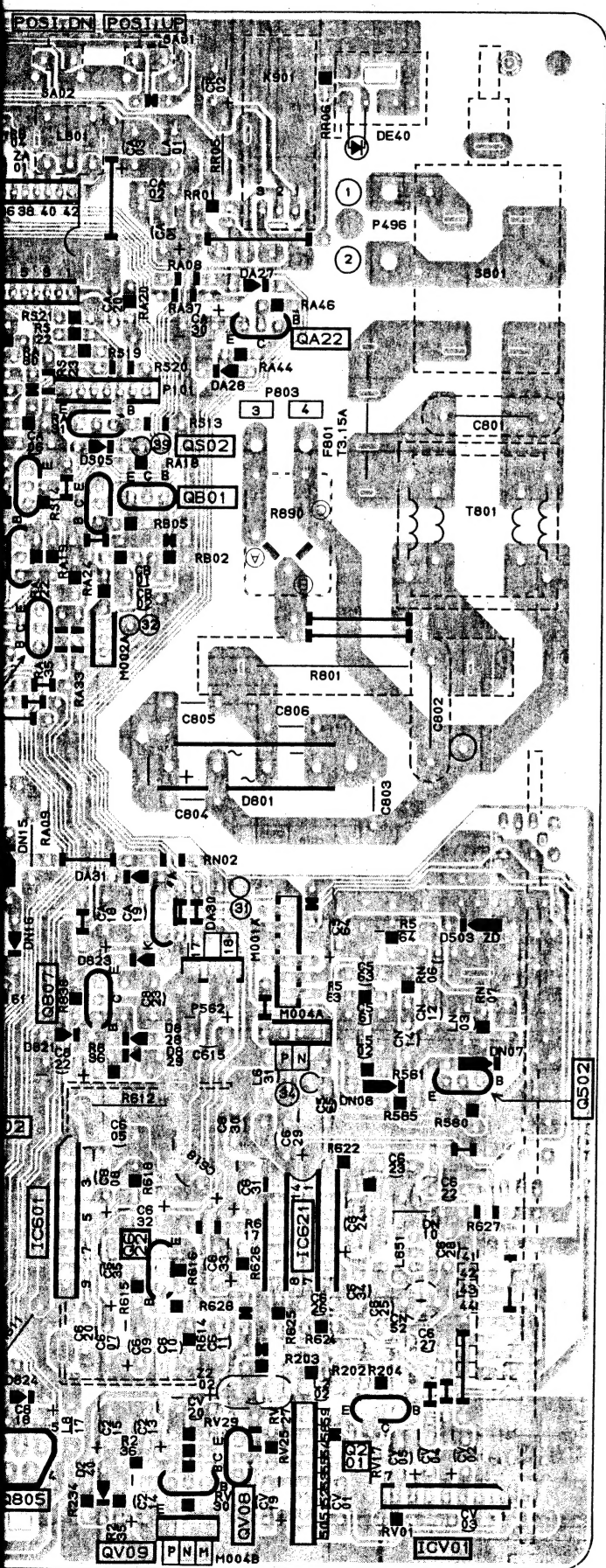
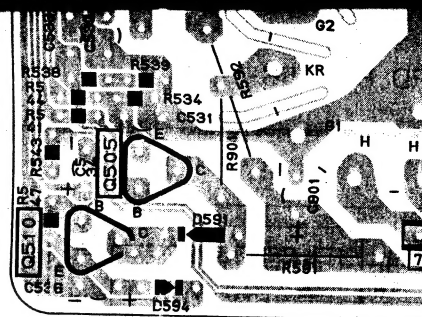
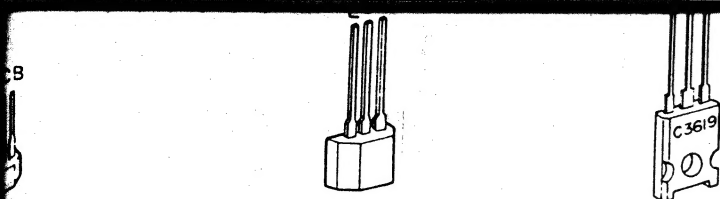
MAIN BOARD PW6863-1 BOTTOM (FOIL) SIDE



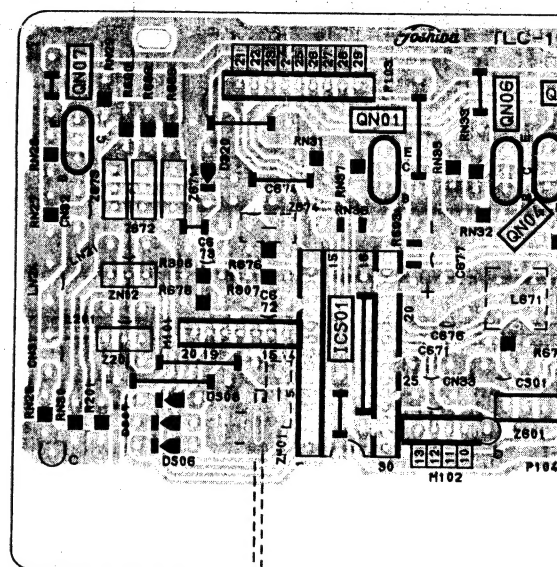


BOTTOM (FOIL) SIDE

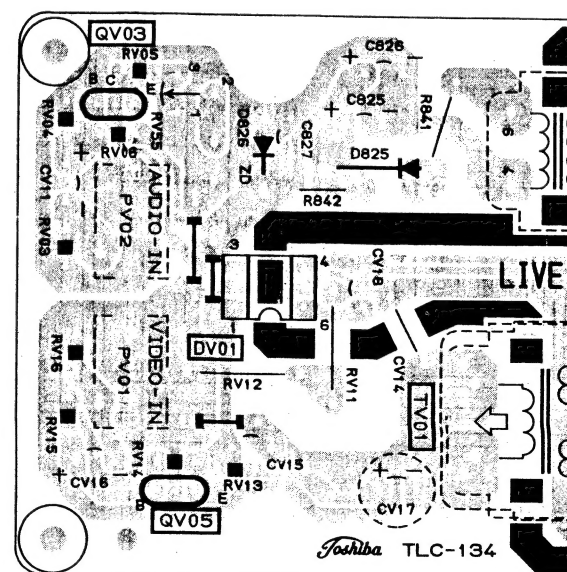




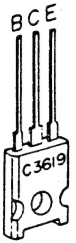
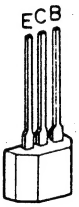
SYSTEM SWITCH BOARD
BOTTOM (FOIL) SIDE



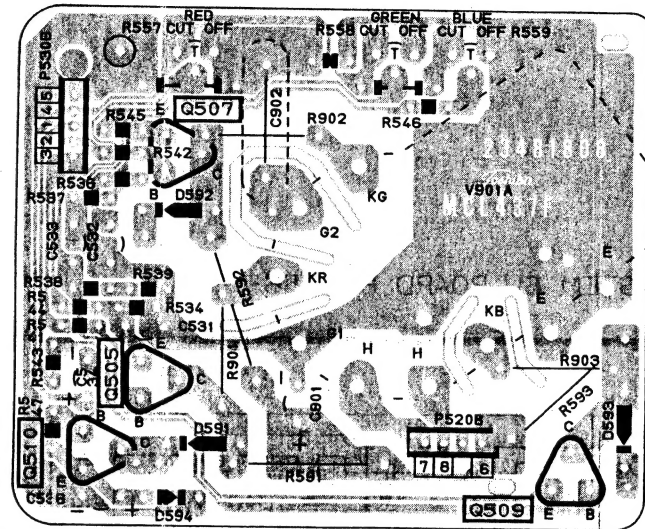
A/V BOARD PW6756
BOTTOM (FOIL) SIDE



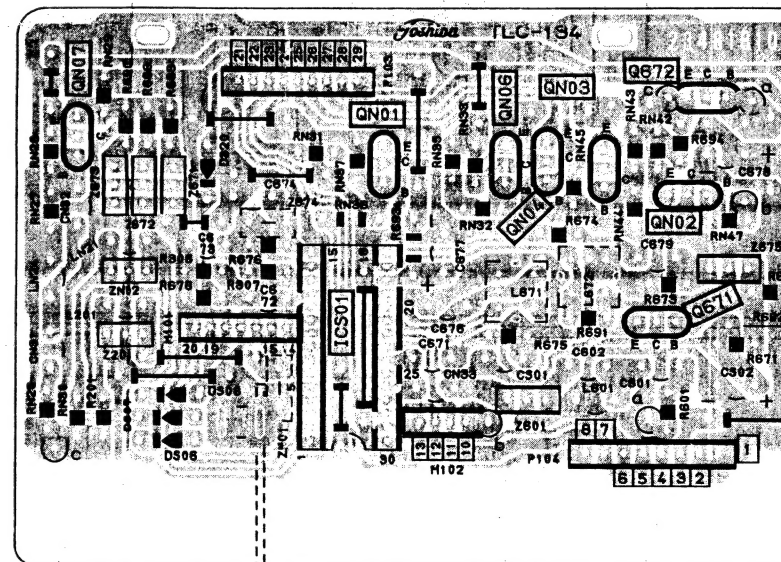
⑧ 2SC3619



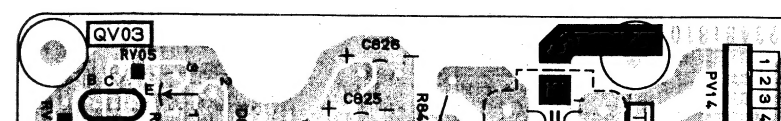
CRT DRIVE BOARD PW6863-2
BOTTOM (FOIL) SIDE



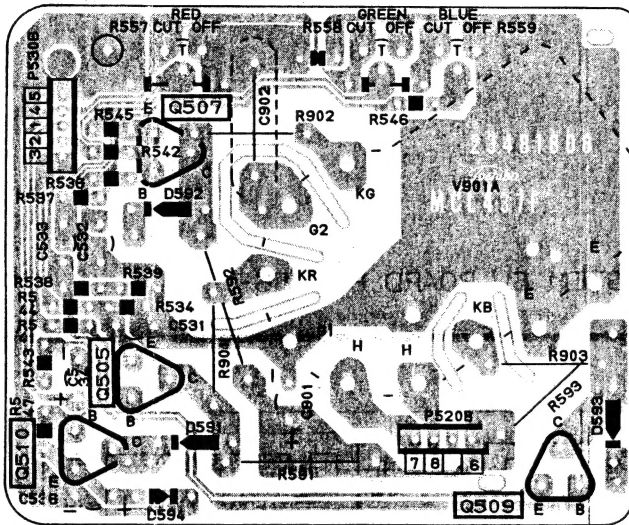
SYSTEM SWITCH BOARD PW6756-1
BOTTOM (FOIL) SIDE



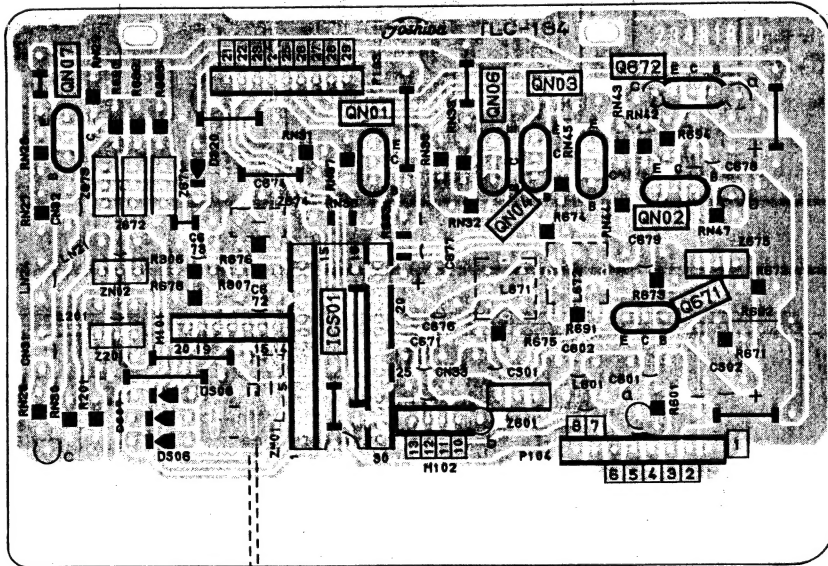
A/V BOARD PW6756-2
BOTTOM (FOIL) SIDE



BOTTOM (FOIL) SIDE



BOTTOM (FOIL) SIDE



BOTTOM (FOIL) SIDE

